A QUICK LOOK INTO

HUMAN ANATOMY

VP. KALANJATI

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PREFACE

BISMILLAHIRRAHMAANIRRAHIIM,

IN THIS BOOK, SEVERAL TOPICS ARE ADDED TO IMPROVE THE CONTENT. WHILST STUDENTS OF MEDICINE AND HEALTH SCIENCES SEEK TO UNDERSTAND THE ESSENTIAL OF HUMAN ANATOMY WITH PARTICULAR EMPHASIS TO THE CLINICAL RELEVANCE. THIS BOOK IS AIMED TO ACHIEVE THIS GOAL BY PROVIDING A SIMPLE YET COMPREHENSIVE GUIDE BOOK USING BOTH ENGLISH AND LATIN TERMS. EACH CHAPTER IS COMPLETED WITH ACTIVITY, OBJECTIVE AND TASK FOR STUDENTS. IN THE END OF THIS BOOK, GLOSSARY AND INDEX ARE PROVIDED. POSITIVE COMMENT AND SUPPORT ARE WELCOME FOR BETTER EDITION IN THE FUTURE.

SURABAYA, 2019
VP. KALANJATI

Dedicated to all Soeronto, Raihan and Kalanjati.

CONTENT:

CHAPTER 1 UPPER LIMB

UPPER LIMB

ACTIVITY:

IN THIS CHAPTER, STUDENTS LEARN ABOUT THE STRUCTURES OF THE UPPER LIMB INCLUDING THE BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT THE ANATOMY OF HUMAN'S UPPER LIMB PER REGION I.E. SHOULDER, ARM, FOREARM AND HAND.

TASK FOR STUDENTS!

1. DRAW A COMPLETE SCHEMATIC DIAGRAM OF PLEXUS BRACHIALIS AND ITS BRANCHES!

2. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE VASCULARISATION IN THE UPPER LIMB!

1. UPPER LIMB

REGIO DELTOPECTORALE

OSTEOLOGY
A. CLAVICULA, IS AMONGST THE FIRST BONES TO GO UNDER OSSIFICATION. THE S-SHAPE CAN BE DESCRIBED AND FORMED BY 3 PARTS: SHAFT, STERNAL END, ACROMIAL END. IT IS HELD BY LIG. CORACOCLAVICULARE TO THE PROCESSUS CORACOIDEUS THAT ATTACHED TO OS CLAVICULA. FIVE MUSCLES ATTACHED TO OS CLAVICULA ARE MM. PECTORALIS MAJOR, STERNOCLEIDOMASTOIDEUS, TRAPEZIUS, SUBCLAVIUS, DELTOIDEUS. STRUCTURES AT OS CLAVICULA: IMPRESSIO LIGAMENTUM COSTOCLAVICULARE, TUBERCULUM CONOIDEUM, LINEA TRAPEZOIDEA, SULCUS SUBCLAVIUS, SPINA SCAPULAE, FOSSA SUPRASPINATA, FOSSA INFRASPINATA, FOSSA SUBSCAPULARIS.

B. SCAPULA, DIVIDED INTO PARS SUPRASPINATUS AND PARS INFRASPINATUS BY SPINA SCAPULAE, WITH ITS LATERAL END, CORACOID PROCESS (ANTERIOR SIDE), AND ACROMION (POSTERIOR SIDE).
STRUCTURES OF SCAPULAE INCLUDING:

- A. ANGULUS SUPERIOR: WITH THE INCISURA SCAPULAE.
- B. ANGULUS INFERIOR.
- C. MARGO MEDIALIS.
- D.MARGO LATERALIS: TUBERCULUM SUPRAGLENOIDALE AND TUBERCULUM INFRAGLENOIDALE, WITH CAVITAS GLENOIDALE, PROCESSUS CORACOIDEUS, ACROMION.
- E. MARGO SUPERIOR: FOSSA SUPRASCAPULARIS, WHERE A & N. SUPRACLAVICULARIS RESIDED.

TRIGONUM DELTOPECTORALE
COVERED BY FASCIA CLAVIPECTORALIS (CORACOCLEIDOPECTORALE).
BORDERS:
1. CLAVICULA AT THE SUPERIOR SIDE
2. M. DELTOIDEUS AT THE LATERAL SIDE
3. M. PECTORALIS MAJOR AT THE MEDIAL SIDE.
STRUCTURES:
1. N. PECTORALIS LATERALIS
2. A. THORACOACROMIALE
3. V. CEPHALICA (RAMUS DELTOIDEA)
4. LYMPHNODUS (INFRACLAVICULARE).

PAINFUL ARC SYNDROME OF SUPRASPINATUS TENDINITIS IS PRODUCED WHEN SHOULDER JOINT IS ABDUCTED 60-120°, DUE TO IMPINGEMENT OF THIS MUSCLE BY LIG. CORACOACROMIALE BECAUSE OF THE INFLAMATION OF BURSA SUBACROMIALE.

AREA OF THE SHOULDER

AREA	SPATIUM QUADRANGULARE	SPATIUM TRIANGULARE/ UPPER TRIANGULAR AREA	INTERVAL TRIANGULARE/ LOWER TRIANGULAR AREA
BORDERS	HUMERUS, TENDO M. TRICEPS BRACHII CAPUT LATERALE ET CAPUT LONGUM, M. TERES MAJOR ET MINOR	M. TRICEPS BRACHII CAPUT LONGUM, M. TERES MAJOR ET MINOR	M. TRICEPS BRACHII CAPUT LATERALE ET CAPUT LONGUM, M. TERES MAJOR
CONTENT	A. CIRCUMFLEXA HUMERI POSTERIOR N. AXILLARIS	A. CIRCUMFLEXA SCAPULAE	A. PROFUNDA BRACHII N. RADIALIS

MUSCLES OF THE PECTORAL GIRDLE

MUSCLE	**INNERVATION**
STERNOCLEIDOMASTOIDEUS	CN. XI PARS SPINALIS
TRAPEZIUS	CN. XI PARS SPINALIS
LATISSIMUS DORSI	N. THORACODORSALIS
LEVATOR SCAPULA	N. DORSALIS SCAPULAE
RHOMBOIDEUS MAJOR	N. AXILLARIS
RHOMBOIDEUS MINOR	N. AXILLARIS

MUSCLE	INNERVATION
PECTORALIS MAJOR	N. PECTORALIS LATERALIS ET MEDIALIS
PECTORALIS MINOR	N. PECTORALIS MEDIALIS ET LATERALIS
DELTOIDEUS	N. AXILLARIS
TERES MINOR	N. AXILLARIS
TERES MAJOR	N. SUBSCAPULARIS INFERIOR
SUBSCAPULARIS	N. SUBSCAPULARIS SUPERIOR ET INFERIOR
SERRATUS ANTERIOR	N. THORACICUS LONGUS
SUBCLAVIUS	N. SUBCLAVIUS
SUPRASPINATUS	N. SUPRASCAPULARIS
INFRASPINATUS	N. SUPRASCAPULARIS

BLOOD SUPPLY

ARTERY	ORIGIN	BRANCHES AND AREA SUPPLIED
SUBCLAVIA DEXTRA ET SINISTRA (D & S)	TRUNCUS BRACHIOCEPHALICUS (D) & ARCUS AORTA (S)	I. AA. VERTEBRALIS, THORACICA INTERNA DAN TRUNCUS THYROCERVICALIS. T THE END OF THE FIRST RIB BECOMES A. AXILLARIS. II. TRUNCUS COSTOCERVICALIS WITH BRANCEHS: AA. INTERCOSTALIS SUPERIOR 1-2, CERVICALIS PROFUNDUS. III. SCAPULARIS DORSALIS- FOR MM. LEVATOR SCAPULAE AND RHOMBOIDEA).
THORACICA INTERNA	SUBCLAVIA PART 1	AA. INTERCOSTALES ANTERIORES, MUSCULOPHRENICA, EPIGASTRICA SUP, PERICARDIACOPHRENICA .

ARTERY	ORIGIN	BRANCHES AND AREA SUPPLIED
TRUNCUS THYROCERVICALIS	SUBCLAVIA PART 1	RR. SUPRASCAPULAR, TRANSVERSA COLLI, THYROIDEA INFERIOR, CERVICALIS ASCENDENS
AXILLARIS	SUBCLAVIA	
THORACICA SUPERIOR	AXILLARIS PART 1	FOR M. SERRATUS ANTERIOR DAN ICS 1-2
THORACOACROMIALE	AXILLARIS PART 2	RR. PECTORALIS, CLAVICULARIS, ACROMIALIS, DELTOIDEA
LATERAL THORACIC	AXILLARIS PART 2	FOR BAGIAN LATERAL GLANDULA MAMMARIA
CIRCUMFLEX HUMERAL (ANT & POST) AND TRUNCUS SUBSCAPULARIS	AXILLARIS PART 3	FOR COLLUM HUMERI
CIRCUMFLEXA SCAPULARIS	SUBSCAPULARIS	FOR REGIO SCAPULARIS
THORACODORSALIS	SUBSCAPULARIS	FOR M. LATISSIMUS DORSI

MOVEMENT OF GLENOHUMERAL JOINT

MOVEMENT	MUSCULUS
FLEXION (0-90°)	PECTORALIS MAJOR, DELTOIDEUS PARS ANTERIOR
EXTENSION (0-45°)	POSTERIOR FIBRES OF DELTOIDEUS, LATISSIMUS DORSI, TERES MAJOR
ABDUCTION (0-180°)	DELTOIDEUS, SUPRASPINATUS
ADDUCTION (0-45°)	PECTORALIS MAJOR, LATISSIMUS DORSI, SUBSCAPULARIS, TERES MAJOR, INFRASPINATUS

MOVEMENT	MUSCULUS
LATERAL ROTATION (0-55°)	INFRASPINATUS, TERES MINOR, DELTOIDEUS PARS POSTERIOR
MEDIAL ROTATION (0-40°)	PECTORALIS MAJOR, LATISSIMUS DORSI, SUBSCAPULARIS, TERES MAJOR, DELTOIDEUS PARS ANTERIOR
CIRCUMDUCTION	COMBINATION OF FLEXION, EXTENSION, ABDUCTION, ADDUCTION

AXILLA

RESIDED BETWEEN THORACIC WALL & SUPERIOR EXTREMITY, ACTS AS DISTRIBUTION CENTER, PYRAMIDAL SHAPE. CONSISTS OF: APEX, BASE, 4 WALLS.

CONTAINS:

-FAT & LYMPH NODES
-AV. AXILLARIS
-PLEXUS BRACHIALIS AND ITS BRANCHES.

THREE PARTS OF BRANCHES OF A. AXILLARIS (FROM A. SUBCLAVIA), DIVIDED BY M. PECTORALIS MINOR:

1. A. THORACICA SUPERIOR
2. A. THORACOACROMIALIS
   A. THORACICA LATERALIS
3. A. CIRCUMFLEXA HUMERI ANTERIOR ET POSTERIOR
   A. SUBSCAPULARIS (BRANHES OUT AS A. CIRCUMFLEXA SCAPULARIS, A. THORACODORSALIS).

LYMPHNODE GROUPS OF AXILLA:

1. ANTERIOR
2. POSTERIOR
3. LATERAL
4. APICAL
5. CENTRAL

ARM

THIS REGION IS ALSO NAMED BRACHII.

OSTEOLOGY

HUMERUS, STRUCTURES IN THIS BONE FOR EXAMPLES: CAPUT HUMERI, COLLUM ANATOMICUM, COLLUM CHIRURGICUM, TUBERCULUM MAJUS, TUBERCULUM MINUS, CRISTA TUBERCULI MAJORIS ET MINORIS, SULCUS INTERTUBERCULARIS, TUBEROSITAS DELTOIDEA, SULCUS SPIRALIS OF N. RADIALIS, CAPITULUM HUMERI, TROCHLEA HUMERI,

FOSSA CORONOIDEA, FOSSA OLECRANII, FOSSA RADIALIS, EPICONDYLUS LATERALIS ET MEDIALIS, SULCUS N. ULNARIS.

RADIX MEDULLA SPINALIS	RAMI ANTERIOR	TRUNCUS	DIVISION	FASCICULUS	TERMINAL BRANCHES
C5 C6	N. PHRENICUS (C3-C5) N. DORSALIS SCAPULARIS N. THORACICUS LONGUS	N. SUPRA SCAPULARIS N. SUB CLAVIUS			- N. PECTORALIS LATERALIS - N. MEDIANUS (RADIX LATERALIS) - N. MUSCULOCUTANEUS (THUS N. CUTANEUS LATERALIS ANTEBRACHII)
C7					- N. AXILLARIS - N. THORACODORSALIS - N. SUBSCAPULARIS - N. RADIALIS
C8 T1					- N. MEDIANUS (RADIX MEDIALIS) - N. ULNARIS - N. PECTORALIS MEDIALIS - N. CUTANEUS BRACHII MEDIALIS - N. CUTANEUS ANTEBRACHII MEDIALIS

ANTERIOR COMPARTMENT OF ARM

MUSCLE	INNERVATION
BICEPS BRACHII CAPUT LONGUM	N. MUSCULOCUTANEUS
BICEPS BRACHII CAPUT BREVIS	N. MUSCULOCUTANEUS
CORACOBRACHIALIS	N. MUSCULOCUTANEUS
BRACHIALIS	N. MUSCULOCUTANEUS

POSTERIOR COMPARTMENT OF ARM

MUSCLE	INNERVATION
TRICEPS BRACHII CAPUT LONGUM	N· RADIALIS
TRICEPS BRACHII CAPUT LATERALE	N· RADIALIS
TRICEPS BRACHII CAPUT MEDIALE	N· RADIALIS

BLOOD SUPLY

A· BRACHIALIS BEFORE BRANCHES AS A· ULNARIS AND A· RADIALIS AT THE DISTAL END; BRANCHES OUT AS:

1· A· PROFUNDA BRACHII
2· A· COLLATERALIS ULNARIS SUPERIOR ET INFERIOR
3· AA· NUTRIENTS FOR HUMERUS·

VOLKMANN'S ISCHEMIC CONTRACTURE IS A LESION AND FIBROSIS OF THE FOREARM MUSCLES DUE TO INTENSE SPASM OF A· BRACHIALIS DURING SUPRACONDYLAR FRACTURE·

FOREARM

OSTEOLOGY

IN THE FOREARM/ ANTEBRACHII REGION THERE ARE 2 BONES:

RADIUS, STRUCTURES: CAPITULUM RADII, FOVEA CAPITULI ARTICULARIS, CIRCUMFERENTIA ARTICULARIS RADII, TUBEROSITAS RADII, PROCESSUS STYLOIDEUS RADII, MARGO INTEROSSEA, TUBEROSITAS PRONATORIA·

ULNAE, STRUCTURES: INCISURA TROCHLEARIS SEMILUNARIS, OLECRANON, PROCESSUS CORONOIDEUS, TUBEROSITAS ULNAE, INCISURA RADIALIS ULNAE, CRISTA M· SUPINATORIA, MARGO INTEROSSEA, PROCESSUS STYLOIDEUS ULNAE, CAPUT ULNAE·

ANTERIOR COMPARTMENT OF FOREARM

MUSCLES	INNERVATION
SUPERFICIAL GROUP	
FCU (FLEXOR CARPI ULNARIS)	N· ULNARIS

FCR (FLEXOR CARPI RADIALIS)	N. MEDIANUS
FDS (FLEXOR DIGITORUM SUPERFICIALIS)	
PT (PRONATOR TERES)	
PL (PALMARIS LONGUS)	
PROFUNDUS GROUP	
FDP (FLEXOR DIGITORUM PROFUNDUS)	MEDIAL PART—N. ULNARIS LATERAL PART—N. MEDIANUS
FPL (FLEXOR POLLICIS LONGUS)	N. INTEROSSEUS ANTERIOR FROM N. MEDIANUS
PQ (PRONATOR QUADRATUS)	

POSTERIOR COMPARTMENT OF FOREARM

MUSCLES	**INNERVATION**
ECRL (EXTENSOR CARPI RADIALIS LONGUS)	N. RADIALIS
BR (BRACHIORADIALIS)	
ANCONEUS	
ECRB (EXTENSOR CARPI RADIALIS BREVIS)	RAMUS PROFUNDUS N. RADIALIS
SUPINATOR	
ECU (EXTENSOR CARPI ULNARIS)	N. INTEROSSEUS POSTERIOR FROM N. RADIALIS
EDMI (EXTENSOR DIGITI MINIMI)	
APL (ABDUCTOR POLLICIS LONGUS)	
EPL (EXTENSOR POLLICIS LONGUS)	
EPB (EXTENSOR POLLICIS BREVIS)	

EI (EXTENSOR INDICIS)	
ED (EXTENSOR DIGITORUM)	

FOSSA CUBITI

THIS FOSSA IS DEFINED BY AHORIZONTAL LINE JOINING THE TWO EPICONDYLES; THE MEDIAL BORDER OF BRACHIORADIALIS; AND THE LATERAL BORDER OF PRONATOR TERES. THE FLOOR OF THE FOSSA CONSISTS OF BRACHIALIS MUSCLE AND THE OVERLYING ROOF OF SUPERFICIAL FASCIA.THE SUPERFICIAL VEINS OF CUBITAL FOSSA INCLUDING V. MEDIANA CUBITI THAT DRAINS INTO V. BASILICA AT THE LATERAL SIDE AND V. CEPHALICA AT THE MEDIAL SIDE. THIS VEIN IS IMPORTANT IN THE CLINICS FOR ACQUIRING THE VEIN BLOOD FOR LAB TESTS. THE RADIAL AND ULNAR NERVES LIE OUTSIDE THE CUBITAL FOSSA. THE RADIAL NERVE PASSES ANTERIOR TO THE LATERAL EPICONDYLE BETWEEN BRACHIALIS AND BRACHIORADIALIS MUSCLES. THE ULNAR NERVE WINDS BEHIND THE MEDIAL EPICONDYLE.

FROM LATERAL TO MEDIAL SIDE, FOSSA CUBITI CONTAINS:

1. TENDO M. BICEPS BRACHII, AT THE SUPERFICIAL OF BICIPITAL APONEUROSIS LIES V. MEDIANA CUBITI
2. A. BRACHIALIS—A. RADIALIS ET A. ULNARIS
3. N. MEDIANUS

IN THE PROFUNDUS SIDE, N. RADIALIS BRANCHES INTO:

1. POSTERIOR INTEROSSEUS NERVE FOR ANTEBRACHII MUSCLES.
2. RAMUS SUPERFICIALIS FOR THE SENSORY OF THREE AND A HALF OF DORSUM MANUS.

BLOOD SUPPLY

FROM A. BRACHIALIS:

1. A. RADIALIS:
   - A. RECURRENS RADIALIS
   - R. CARPALIS DORSALIS ET PALMARIS.
2. A. ULNARIS:
   - A. RECURRENS ULNARIS; A. RECURRENS ULNARIS ANTERIOR ANASTOMOSES WITH A. COLLATERAL ULNARIS INFERIOR; A. RECURRENS ULNARIS POSTERIOR ANASTOMOSES WITH A. COLLATERAL ULNARIS SUPERIOR AROUND THE ELBOW FOSSA.
   - R. CARPALIS PALMARIS ET DORSALIS
   - A. INTEROSSEUS COMMUNIS—A. INTEROSSEUS ANTERIOR ET POSTERIOR; A. INTEROSSEUS POSTERIOR—A. RECURRENS INTEROSSEUS.

THE VEINS ARE USUALLY PARALLEL TO ITS ARTERY.

WRIST

STRUCTURES LIED FROM MEDIAL TO THE LATERAL SIDE OF THE WRIST:

1. TENDO M. FCU

2. N. ULNARIS

3. A. ULNARIS, TOGETHER WITH N. ULNARIS, COVERED BY A FIBROUS SHEETH FORMS GUYON TUNNEL, THAT LIES OVER THE FLEXOR RETINACULUM.

4. TENDO M. PALMARIS LONGUS

5. N. MEDIANUS

6. TENDO M. PRONATOR TERES

7. A. RADIALIS

8. TENDO M. FCR.

THE ALLEN'S TEST, IS USEFUL TO CHECK THE BLOOD FLOW FROM A. RADIALIS AND A. ULNARIS BY TEMPORARILY PRESSING EACH A. AT A TIME.

CARPAL TUNNEL SYNDROME

THE CARPAL TUNNEL: IS A SPACE BETWEEN SCAPHOID AND TRAPEZOID AT THE LATERAL; HAMATUM AND PISIFORME AT THE MEDIAL; THE FLOOR MOSTLY BY SCAPHOID; COVERED BY FLEXOR RETINACULUM.

CONTAINS: TENDO OF M. FDS, M. FDP AND M. FPL; ALSO N. MEDIANUS. CARPAL TUNNEL SYNDROME OCCURS WHEN THE N. MEDIANUS IS COMPROMISED DUE TO THE LIMITATION OF SPACE INSIDE THE CARPAL TUNNEL.

HAND

OSTEOLOGY

OSSA CARPALIA, STRUCTRES: OS SCAPHOIDEUM, OS LUNATUM, OS TRIQUETRUM, OS PISIFORME, OS TRAPEZIUM (MULTANGULUM MAJUS), OS TRAPEZOIDEUM (MULATNGULUM MINUS), OS CAPITULUM, OS HAMATUM. IMPORTANT STRUCTURES I.E.: EMINENTIA CARPI RADIALIS ET ULNARIS.

OSSA METACARPALIA, COMPRISED OF 5 BONES. FRACTURES OF THE 5TH METACARPAL, A BOXER'S FRACTURE CAUSING THE HEAD OF THIS BONE TO ROTATE OVER THE DISTAL SHAFT.

PHALANGES, 5 BONES. THE TUBEROSITAS UNGUALIS SUPPORTS THE FINGERNAIL.

THE ANATOMICAL SNUFFBOX REGION RESIDED AT THE LATERAL DORSUM MANUS, BORDERS: TENDO OF M. ABDUCTOR POLLICIS LONGUS ET M. EXTENSOR POLLICIS BREVIS AT THE LATERAL & TENDO M. EXTENSOR POLLICIS LONGUS AT THE MEDIAL SIDE.

CONTENTS:

1. V. CEPHALICA 2. A. RADIALIS.

BLOOD SUPPLY OF THE HANDS

ARTERY	ORIGIN	DESCRIPTION
ARCUS PALMARIS SUPERFICIALIS	CONTINUATION OF A. ULNARIS, WITH CONTRIBUTION FROM A. RADIALIS	AA. DIGITALES PALMARES COMMUNIS
ARCUS PALMARIS PROFUNDUS	CONTINUATION OF A. RADIALIS, WITH CONTRIBUTION FROM A. ULNARIS	AA. METACARPALIA PALMARES
A. DIGITALIS PALMARIS COMMUNIS	ARCUS PALMARIS SUPERFICIALIS	AA. DIGITALES PALMARES PROPER
AA. DIGITALES PALMARES PROPRIAE	AA. DIGITALES PALMARES COMMUNES	SUPPLY DIGITS
A. PRINCEPS POLLICIS	A. RADIALIS	SUPPLIES THUMBS
A. RADIALIS INDICIS		SUPPLIES 2ND DIGITS
ARCUS CARPALIA DORSALIS	A. RADIALIS ET A. ULNARIS	SUPPLIES WRIST
ARCUS CARPALIA PALMARIS		

THENAR GROUP MUSCLES (INNERVATION)	INTRINSIC GROUP MUSCLES	HYPOTHENAR GROUP MUSCLES
1· OPPONENS POLLICIS (R· RECURRENS N· MEDIANUS) 2· ABDUCTOR POLLICIS (R· RECURRENS N· MEDIANUS) 3· FLEXOR POLLICIS BREVIS (SUPERFICIAL HEAD—R· RECURRENS N· MEDIANUS; PROFUNDUS HEAD—R· PROFUNDUS N· ULNARIS)	1· ADDUCTOR POLLICIS (R· PROFUNDUS N· ULNARIS) 2· 4 LUMBRICALES (1&2 BY N· MEDIANUS; 3&4 BY RAMUS PROFUNDUS N· ULNARIS) 3· 4 DORSAL INTEROSSEI (RAMUS PROFUNDUS N· ULNARIS) 4· 3 PALMAR INTEROSSEI (RAMUS PROFUNDUS N· ULNARIS) 5· PALMARIS BREVIS (RAMUS SUPERFICIALIS N· ULNARIS)	1· OPPONENS DIGITI MINIMI (R· PROFUNDUS N· ULNARIS) 2· ABDUCTOR DIGITI MINIMI (R· PROFUNDUS N· ULNARIS) 3· FLEXOR DIGITI MINIMI (R· PROFUNDUS N· ULNARIS)

CHAPTER 2 LOWER LIMB

LOWER LIMB

ACTIVITY:

IN THIS CHAPTER, STUDENTS WILL LEARN ABOUT THE STRUCTURES OF THE LOWER LIMB INCLUDING THE BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT THE ANATOMY OF HUMAN'S LOWER LIMB PER REGION I.E. GLUTEAL, FEMORAL, GENU, CRURALE AND FOOT. STUDENTS LEARN ABOUT THE STRUCTURES OF BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

TASK FOR STUDENTS!

1. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE PLEXUS LUMBOSCARALIS AND ITS BRANCHES!

2. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE VASCULARISATION OF THE LOWER LIMB!

2. LOWER LIMB

OSTEOLOGY

1. OS COXAE, FORMED BY 3 BONES OS ILIUM, OS ISCHIUM AND OS PUBIS.
    - ACETABULUM, HAS A LIG. TRANSVERSUM ACETABULARE AND FACIES LUNATA ACETABULI WITH THE LIMBUS SUROUNDING IT.
    - FORAMEN OBTURATUM (OBTURATORIUM): MOSTLY COVERED BY MEMBRANA OBTURATORIA, SUPERIORLY LIED CANALIS OBTURATORIA THAT CONNECTS CAVUM PELVIS AND LOWER LIMB, TRANSMITS BY VASA AND NERVUS OBTURATORIA.
    - INCISURA ISCHIADICA MAJOR: SUPERIOR TO SPINA ISCHIADICA.
    - INCISURA ISCHIADICA MINOR: INFERIOR TO SPINA ISCHIADICA.

    OS ILIUM

    THE MOST SUPERIOR OF OS COXAE, ARTICULATES TO OS SACRUM, OS ISCHIUM DAN OS PUBIS.

    - CRISTA ILIACA: AT THE ANTERIOR ENDS AS SPINA ILIACA ANTERIOR SUPERIOR AND TO INFERIOR ENDS AS SPINA ILIACA ANTERIOR INFERIOR. AT POSTERIOR ENDS AS SPINA ILIACA POSTERIOR SUPERIOR AND CONTINUES TO INFERIOR AS SPINA ILIACA POSTERIOR INFERIOR.
    - LINEA GLUTEA INFERIOR, ANTERIOR DAN POSTERIOR: AS ATTACHMENT OF MM. GLUTEUS MAXIMUS, MEDIUS DAN MINIMUS, RESPECTIVELY.
    - FACIES AURICULARIS: AS ARTICULATION TO OS SACRUM. AT POSTERIOR LIES TUBEROSITAS ILIACA.
    - FOSSA ILIACA
    - CORPUS OS ILIUM

    OS ISCHIUM

    INFERIOR PART OF OS COXAE.

    - TUBER ISCHIADICUM: ORIGINS OF THE HAMSTRING'S MUSCLES AND AS A BASE WHEN SITTING.
    - SPINA ISCHIADICA: DIVIDES INCISURA ISCHIADICA MAJOR ET MINOR.
    - RAMUS OSSIS ISCHII: RAMUS OSSIS ISCHII AND RAMUS INFERIOR OS PUBIS FUSES AS RAMUS ISCHIOPUBICUM OR CONJOINT RAMUS.
    - CORPUS OSSIS ISCHII.

    OS PUBIS

    ANTERIOR PART OF OS COXAE.

    - RAMUS SUPERIOR OSSIS PUBIS: HAS A PECTEN OSSIS PUBIS (LINEA PECTINEA).
    - RAMUS INFERIOR OSSIS PUBIS: ARTICULATES TO RAMUS OSSIS ISCHII.
    - CORPUS OSSIS PUBIS :

- TUBERCULUM PUBICUM.
- CRISTA PUBICA.
- FACIES SYMPHYSIALIS.

2. OS FEMORIS

IS THE LONGEST BONE IN HUMAN.

- CAPUT OSSIS FEMORIS: ARTICULATES TO THE ACETABULUM.
- COLLUM OSSIS FEMORIS.
- TROCHANTER MAJOR ET TROCHANTER MINOR.
- LINEA INTERTROCHANTERICA: AT THE ANTERIOR SIDE CONNECTING TROCHANTER MAJOR ET MINOR.
- CRISTA INTERTROCHANTERICA: AT THE POSTERIOR SIDE CONNECTING TROCHANTER MAJOR ET MINOR.
- CORPUS OSSIS FEMORIS:
  - LINEA ASPERA: INFERIORLY BECOMES LINEA SUPRACONDYLARIS MEDIALIS AND LATERALIS.
  - LINEA PECTINEA.
  - TUBEROSITAS GLUTEA.
  - FACIES POPLITEA: BORDERS BY LINEA SUPRACONDYLARIS MEDIALIS ET LATERALIS AND LINEA INTERCONDYLARIS.
- CONDYLUS MEDIALIS: ARTICULATES TO CONDYLUS MEDIALIS OS TIBIA.
- EPICONDYLUS MEDIALIS: AT THE SUPERIOR LIES TUBERCULUM ADDUCTORIUM.
- CONDYLUS LATERALIS: ARTICULATES TO CONDYLUS MEDIALIS OS TIBIA.
- EPICONDYLUS LATERALIS.
- FOSSA INTERCONDYLARIS.
- LINEA INTERCONDYLARIS.

3. OS PATELLA

BIGGEST SESAMOID BONE IN HUMANS. LIES INSIDE TENDO INSERTIO OF MM. QUADRICEPS FEMORIS.

- FACIES ARTICULARIS: FACIES ARTICULARIS LATERALIS IS WIDER THAN FASCIES ARTICULARIS MEDIALIS.
- FACIES ANTERIOR.
- BASIS PATELLAE.
- APEX PATELLAE.

4. OS TIBIA

ARTICULATES WITH OS FEMORIS; LIES AT THE MEDIAL SIDE OF CRURIS.

- CONDYLUS MEDIALIS DAN LATERALIS.
- FACIES ARTICULARIS SUPERIOR:
  - AREA INTERCONDYLARIS ANTERIOR AND POSTERIOR RESIDED BY LIGAMENTUM CRUCIATUM ANTERIOR AND MENISCUS.
- EMINENTIA INTERCONDYLARIS:

- TUBERCULUM INTERCONDYLARE MEDIALE ET LATERALE.
- CORPUS TIBIAE:
  - TUBEROSITAS TIBIAE: IS THE INSERTION OF MM. QUADRICEPS FEMORIS.
  - FACIES MEDIALIS.
  - FACIES POSTERIOR:
    - LINEA MUSCULI SOLEI: ORIGINS OF M. SOLEUS.
  - FACIES LATERALIS.
  - MARGO ANTERIOR.
  - MARGO MEDIALIS.
  - MARGO INTEROSSEUS.
- MALLEOLUS MEDIALIS: A PROMINENT AREA AT THE MEDIAL SIDE OF THIS BONE, AT THE INFERIOR SIDE ALSO HAS A SULCUS MALLEOLARIS AND FACIES ARTICULARIS MALLEOLI.
- INCISURA FIBULARIS: AT THE INFERIOR SIDE.
- FACIES ARTICULARIS INFERIOR.

5. OS FIBULA

AT THE LATERAL SIDE OF THE CRURIS, DOES NOT FORM ARTICULATIO GENU NOR DIRECTLY PLAY ROLE AS A WEIGHT BEARING.

- CAPUT FIBULAE: APEX CAPITIS FIBULAE FACES POSTEROLATERALLY; WHILST FACIES ARTICULARIS CAPITIS FIBULAE FACES TO ANTEROMEDIAL.
- COLLUM FIBULAE: TRAVELS BY N. PERONEUS COMMUNIS.
  - CORPUS FIBULAE: HAS MARGO ANTERIOR, MARGO INTEROSSEUS: CONNECTS TO MARGO INTEROSSEUS OS TIBIA BY MEMBRANA INTEROSSEA CRURIS, MARGO POSTERIOR.
- MALLEOLUS LATERALIS: A PROMINENT PART AT THE DISTAL OF OS FIBULA.
  - FACIES ARTICULARIS MALLEOLI.
  - FOSSA MALLEOLI LATERALIS WHERE LIG. TALOFIBULARIS POSTERIOR ATTACHES.
  - SULCUS MALLEOLARIS.

6. PEDIS

FORMED BY OSSA TARSALIA, METATARSALIA, AND PHALANGES PEDIS.

OSSA TARSALIA

- OS TALUS: ARTICULATES WITH TIBIA AND FIBULA AT THE ANKLE JOINT. FASCIES MALLEOLARIS LATERALIS HAS PROCESSUS LATERALIS TALI.
- OS CALCANEUS: AT THE MEDIAL SIDE HAS SUSTENTACULUM TALI. AT THE POSTERIOR SIDE OF PLANTA PEDIS HAS TUBER CALCANEI, PROCESSUS MEDIALIS TUBERIS CALCANEI AND PROCESSUS LATERALIS

TUBERIS CALCANEI. SULCUS CALCANEI AT THE SUPERIOR SIDE AND SULCUS TALI AT THE INFERIOR SIDE OF OS TALUS FORM SINUS TARSI.

- OS NAVICULARE PEDIS.
- OS CUBOIDEUM.
- OSSA CUNEIFORME: OSSA CUNEIFORME MEDIALE, INTERMEDIUM ET LATERALE.

OSSA METATARSALIA I-V
OSSA PHALANGES PEDIS
DIGITI I (HALLUX) HAS PHALANGES PROXIMALIS AND DISTALIS. DIGITI II- V HAVE PHALANGES PROXIMALIS, MEDIA DAN DISTALIS.

ARTERIES OF THE LOWER LIMB
FROM A. ILIACA COMMUNIS, COMES OUT A. ILIACA EXTERNA TO GIVE OFF:
A. CIRCUMFLEXA ILIACA SUPERFICIALIS, A. EPIGASTRICA SUPERFICIALIS, A. PUDENDA EXTERNA SUPERFICIALIS ET PROFUNDUS AND A. FEMORALIS. BELOW LIGAMENTUM INGUINALE, A. FEMORALIS LIES LATERAL TO V. FEMORALIS AND MEDIAL TO N. FEMORALIS. FROM A. FEMORALIS COMES:
1. FOUR SUPERFICIAL RAMI,
2. A. PROFUNDA FEMORIS: GIVES OFF 4 AA. PERFORANTES AND RAMI MUSCULARES.
3. A. CIRCUMFLEXA FEMORIS MEDIALIS ET LATERALIS, WHICH BRANCH INCLUDE TROCHANTERIC AND CRUCIATE ANASTOMOSES.
4. TRAVELS INFERIORLY THROUGH CANALIS ADDUCTORIUS AS A. POPLITEA IN FOSSA POPLITEA TO GIVE OFF MUSCULAR, SURAL AND 5 GENICULAR BRANCHES.
5. IN THE INFERIOR END, A. POPLITEA GIVES OFF A. TIBIALIS ANTERIOR WHICH BEFORE CONTINUES AS A. DORSALIS PEDIS, A. METATARSALIS DORSALIS AND ARCUS PLANTARIS PROFUNDUS, GIVES OFF RAMI MUSCULARES ET MALLEOLARES; A. TIBIALIS POSTERIOR WHICH GIVES OFF A. PERONEUS (WHICH WILL GIVE OFF RAMI CALCANEALIS LATERALIS AND PERFORANTES), AND A. PLANTARIS MEDIALIS ET LATERALIS. THE LATEST BRANCHES OUT AS A. METATARSALIS PLANTARIS AND ANASTOMOSES WITH BRANCHES OF A. DORSALIS PEDIS TO FORM ARCUS PLANTARIS PROFUNDUS.

VEINS AND LYMPH OF THE LOWER LIMB
TWO IMPORTANT SUPERFICIAL VEINS ARE V. SAPHENA MAGNA ET PARVA. V. SAPHENA MAGNA IS FROM THE MEDIAL DORSAL ENDS OF DORSAL VEIN NETWORK. IT ENDS IN V. FEMORALIS AFTER PIERCING FOSSA CRIBIFORMIS. THIS VEIN CONNECTS TO THE PROFUNDUS VEIN SYSTEM VIA PERFORATING VEINS AND HAS TRIBUTARIES FROM ANTEROMEDIAL AND POSTEROLATERAL FEMORAL VEINS. V. SAPHENA PARVA IS FROM THE LATERAL ENDS OF THE DORSAL VEIN NETWORK. TOGETHER WITH THE PRIOR, THESE VEINS COMMONLY USE AS CONDUITS IN THE CORONARY ARTERY SURGERY. IT TRAVELS AT THE INFERIOR SIDE OF THE MALEOLUS LATERALIS UP TO THE CALF AND PIERCE IN THE DEEPER SIDE TO END IN V. POPLITEA. THE PROFUNDUS VEINS ARE KNOWN AS VENAE COMMITTANTES, WILL END INTO V. POPLITEA AND V. FEMORALIS.

IN THE CALF, THESE DEEP VEINS NETWORK FORMS PLEXUS SOLEUS, WHICH FLOW IS ASSISTED BY THE CONTRACTION OF THE CALF MUSCLE TO RESIST GRAVITATION. FAILURE OF THIS SO CALLED CALF PUMP MAY LEAD TO THE DVT (DEEP VENOUS THROMBOSIS).

THERE ARE 2 INGUINAL LYMPHNODE GROUPS KNOWN AS SUPERFICIAL AND PROFUNDUS; THE SUPERFICIAL HAS 2 CHAINS, LONGITUDINAL AND HORIZONTAL CHAINS WHILST THE PROFUNDUS USUALLY HAS 3 LYMPHNODES LIES MEDIAL TO V. FEMORALIS AND WILL END IN V. ILIACA EXTERNA THUS TO THE PARAORTIC LYMPHNODES.

1. REGIO FEMORALIS ANTERIOR
ANTERIOR COMPARTMENT

FEATURES	**SIGNIFICANCE**	**OTHER INFORMATION**
TRIGONUM FEMORALE	BORDERS: MEDIAL: MEDIAL BORDER OF M. ADDUCTOR LONGUS LATERAL: MEDIAL BORDER OF M. SARTORIUS SUPERIOR: LIGAMENTUM INGUINALE FLOOR: M. ILIOPSOAS, M. PECTINEUS, M. ADDUCTOR LONGUS.	CONTAINS: FROM MEDIAL TO LATERAL SIDE ARE: V. FEMORALIS, A. FEMORALIS, N. FEMORALIS; WITH DEEP INGUINAL NODES. AS COVER, SUPERFICIAL FASCIA CONTAINING SUPERFICIAL INGUINAL NODES AND V. SAPHENA MAGNA WITH ITS TRIBUTARIES; AND FASCIA LATA AT ITS PROFUNDUS.
HIATUS AND CANALIS ADDUCTORIUS/ SUBSARTORIAL CANAL	BORDERS: ANTEROMEDIAL: M. SARTORIUS ANTEROLATERAL: M. VASTUS MEDIALIS POSTERIOR: M. ADDUCTOR LONGUS ET MAGNUS.	TRANSMITS: A. FEMORALIS, V. FEMORALIS, N. SAPHENUS AND AT ITS UPPER PART IS R. MUSCULARIS VASTUS MEDIALIS FROM N. FEMORALIS.

MUSCULI	**INNERVATION**
MM. ILLIOPSOAS - M. ILIACUS - M. PSOAS MINOR	N. FEMORALIS PLEXUS LUMBALIS (L2-L3)

M. SARTORIUS	N. FEMORALIS
MM. QUADRICEPS FEMORIS : 1. M. RECTUS FEMORIS	N. FEMORALIS
2. M. VASTUS MEDIALIS	
3. M. VASTUS INTERMEDIUS	
4. M. VASTUS LATERALIS	

ANTEROMEDIAL COMPARTMENT

FEATURES	**SIGNIFICANCE**
PES ANSERINUS, AT THE SUPERFICIAL OF MEDIAL TIBIAL LIGAMENT.	FORMED BY TENDO OF 3 MUSCLES: 1. SARTORIUS 2. GRACILLIS 3. SEMITENDINOSUS
MUSCULI	**INNERVATION**
M. PECTINEUS	N. FEMORALIS
M. ADDUCTOR LONGUS	N. OBTURATORIUS
M. ADDUCTOR BREVIS	N. OBTURATORIUS
M. ADDUCTOR MAGNUS	PARS ADDUCTORES : N. OBTURATORIUS PARS EXTENSORES: PARS TIBIALIS N. ISCHIADICUS
M. GRACILIS	N. OBTURATORIUS

2. REGIO GLUTEA

FEATURES	**SIGNIFICANCE**
NERVES: BLOOD SUPPLY:	BRANCHES OF PLEXUS LUMBOSACRALIS. BRANCHES OF A. ILIACA COMMUNIS.
LOCATION OF IM INJECTION	UPPER LATERAL QUADRANT TO AVOID N. ISCHIADICUS

FOSSA SUPRAPIRIFORMIS	TRANSMITS AVN. GLUTEA SUPERIOR
FOSSA INFRAPIRIFORMIS	TRANSMITS AVN. GLUTEA INFERIOR, N. ISCHIADICUS, N. CUTANEUS FEMORIS POSTERIOR, A. PUDENDA INTERNA, N. PUDENDUS.
MUSCULI	**INNERVATION**
M. GLUTEUS MAXIMUS	N. GLUTEUS INFERIOR
M. GLUTEUS MEDIUS	N. GLUTEUS SUPERIOR
M. GLUTEUS MINIMUS	
M. TENSOR FASCIA LATA	
M. PIRIFORMIS	RAMI PLEXUS SACRALIS (S1-S2)
M. GEMELLI SUPERIOR	RAMI PLEXUS SACRALIS (L5 – S1)
M. OBTURATOR INTERNUS	RAMI PLEXUS SACRALIS (L5 – S1)
M. GEMELLI INFERIOR	RAMI PLEXUS SACRALIS (L5 – S1)
M. OBTURATOR EXTERNUS	N. OBTURATORIUS
M. QUADRATUS FEMORIS	RAMI PLEXUS SACRALIS (L5 – S1)

3. REGIO FEMORALIS POSTERIOR

MUSCULI	**INNERVATION**
MM. BICEPS FEMORIS - CAPUT LONGUM - CAPUT BREVIS	N. ISCHIADICUS
M. SEMITENDINOSUS	
M. SEMIMEMBRANOSUS	

FEATURES	SIGNIFICANCE	OTHER INFORMATION
FOSSA POPLITEA	BORDERS: SUPEROMEDIAL: M. SEMIMEMBRANOSUS & SEMITENDINOSUS SUPEROLATERAL: M. BICEPS FEMORIS INFEROMEDIAL AND INFEROLATERAL: CAPUT MEDIAL AND LATERAL OF M. GASTROCNEMIUS.	CONTAINS: A. POPLITEA, V. POPLITEA, N. ISCHIADICUS (SCIATIC) THAT WILL BRANCH OFF INTO N. PERONEUS COMMUNIS AT THE LATERAL AND N. TIBIALIS AT THE MEDIAL SIDE. ALSO CONTAINED FAT PAD, LYMPHNODES AND SUROUNDING BURSAE.

4. REGIO CRURALIS ANTERIOR

MUSCULI	INNERVATION
M. TIBIALIS ANTERIOR	N. PERONEUS/ FIBULARIS PROFUNDUS (L5-S1)
M. EXTENSOR DIGITORUM LONGUS	
M. EXTENSOR HALLUCIS LONGUS	
M. PERONEUS TERTIUS	

5. REGIO CRURALIS LATERAL

MUSCULI	INNERVATION
M. PERONEUS (FIBULARIS) LONGUS	N. PERONEUS/ FIBULARIS SUPERFCIALIS
M. PERONEUS (FIBULARIS) BREVIS	

6. REGIO CRURALIS POSTERIOR

MUSCULI	INNERVATION
SUPERFICIAL GROUP	
M. GASTROCNEMIUS : - CAPUT MEDIALE - CAPUT LATERALE	N. TIBIALIS
M. SOLEUS	

M. PLANTARIS	
DEEP GROUP	
M. POPLITEUS	N. TIBIALIS
M. FLEXOR DIGITORUM LONGUS	
M. TIBIALIS POSTERIOR	
M. FLEXOR HALLUCIS LONGUS	

7. REGIO DORSUM PEDIS

MUSCULI	**INNERVATION**
M. EXTENSOR DIGITORUM BREVIS	N. PERONEUS/ FIBULARIS PROFUNDUS
M. EXTENSOR HALLUCIS BREVIS	

8. REGIO PLANTAR PEDIS

MUSCULI	**INNERVATION**
1ST LAYER	
M. ABDUCTOR HALLUCIS	N. PLANTARIS MEDIALIS
M. FLEXOR DIGITORUM BREVIS	
M. ABDUCTOR DIGITI MINIMI	N. PLANTARIS LATERALIS
2ND LAYER	
M. QUADRATUS PLANTAE	N. PLANTARIS LATERALIS
M. LUMBRICALIS I	N. PLANTARIS MEDIALIS
MM. LUMBRICALES II-IV	N. PLANTARIS LATERALIS
3RD LAYER	
M. FLEXOR HALLUCIS BREVIS	N. PLANTARIS MEDIALIS

M. ADDUCTOR HALLUCIS: - CAPUT OBLIQUE - CAPUT TRANSVERSUM	N. PLANTARIS LATERALIS
M. FLEXOR DIGITI MINIMI BREVIS	
4TH LAYER	
MM. INTEROSSEI DORSALIS (4)	N. PLANTARIS LATERALIS
MM. INTEROSSEI PLANTARIS (3)	

CHAPTER 3 THORAX

THORAX

ACTIVITY:

IN THIS CHAPTER, STUDENTS LEARN ABOUT THE STRUCTURES OF THE THORAX INCLUDING THE BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT THE ANATOMY OF HUMAN'S THORAX I.E. THORACIC WALL, MEDIASTINUM, PLEURA AND PULMO, PERICARDIUM AND CORDIS AND OTHER STRUCTURES TRAVEL IN THIS REGION (BLOOD AND LYMPH VESSELS, SYMPATHETIC TRUNK ETC.).

TASK FOR STUDENTS!

1· DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE BRONCHUS AND ITS BRANCHES!

2· DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE BLOOD SUPPLY OF THE HEART AND THE GREAT VESSELS THAT COMES TO- AND FRO-!

3· THORAX

A· THORACIC WALL

APERTURA THIRACICA SUPERIOR BORDERED TO RADIX COLLI, APERTURA THORACICA INFERIOR BORDERED TO THE EBDOMINAL CAVITY BY THE DIAPHRAGMA SS· THESE ARE FORMEDD BY: THE JUGULAR/ SUPRASTERNAL NOTCH, THE CLAVICLE, COSTA I, AND THE FIRST THORACAL VERTEBRA AT THE CRANIAL PART; WHILST AT THE CAUDAL PART FORMED BY THE XYPHISTERNAL JUNCTION, ARCUS COSTARUM OF VII-X COSTAL CARTILAGE AND COSTA XI-XII AND THE LOWEST THORACIC VERTEBRA·

THE BONES IN THIS SITE ARE:

1· STERNUM, HAS 3 PARTS:
   a· MANUBRIUM STERNI
   b· CORPUS STERNI
   c· PROCESSUS XYPHOIDEUS

   DESCRIPTION:

   MANUBRIUM STERNI AT THE LEVEL OF VERTEBRAE TH II-III, HAS A NOTCH CALLED SUPRASTERNAL NOTCH OR FOSSA JUGULARIS STERNALIS· ANGULUS STERNI LUDOVICI AT THE LEVELS OF TH IV-TH V, POINTS THE LEVEL OF COSTA II (LATERAL) AND AT THE LEVEL OF VERTEBRAE TH IV· CORPUS STERNI, AT THE MOST CRANIOLATERAL SIDE JOINTS TO COSTA II AND LIES AT THE LEVEL OF VERTEBRAE TH V-IX· PROCESUSS XYPHOIDEUS, HAS A XYPHISTERNAL JOINT AT THE LEVEL OF TH IX-X·

   CLINICS:

   THE AREA OF PALMAR MANUS WHEN DOING A CPR (CARDIOPULMONARY RESCUCITATION) IN ADULTS·

2· COSTAE:
   a· CAPUT
   b· COLLUM
   c· TUBERCULUM

   DESCRIPTION:

   SULCUS COSTAE CONTAINS A NEUROVASCULAR BUNDLE· THE NEUROMUSCULAR BUNDLES ARE FOUND BETWEEN THE MIDDLE AND INNERMOST LAYERS, PROTECTED BY THE COSTAL GROOVE OF THE SUPERIOR RIB OF EACH INTERCOSTAL SPACE· THEY ARE ORDERED VEIN, A·, NERVE FROM SUPERIOR TO INFERIOR (MNEMONIC VAN)· THE COLLATERAL NEUROVASCULAR BUNDLE RUNS AT THE LOWER EDGE OF THE SPACE, JUST ABOVE THE INFERIOR RIB AND THE ORDER IS REVERSED, I·E· NERVE, A·, VEIN FROM SUPERIOR TO INFERIOR·

COSTA I HAS A TUBERCULUM SCALENI TO ATTACH MM. SCALENI, ALSO HAS SULCUS A. SUBCLAVIA, SULCUS V. SUBCLAVIA. COSTA II HAS A TUBERCULUM COSTA TO ATTACH M. SCALENUS POSTERIOR AND M. SERRATUS ANTERIOR.

- COSTA VERAE (I-VII)
- COSTA SPURIAE (VIII-XII)
  - COSTA ARCUARIAE (VIII-X)
  - COSTA FLUCTUANTES (XI-XII)

STRUCTURES OF COSTA VERAE:

CAPUT COSTAE, COLLUM COSTAE, CORPUS COSTAE, FACIES ARTICULARIS COSTAE, CAPITULI (CAPITIS) COSTAE, CRISTA CAPITULI COSTAE, TUBERCULUM COSTAE, ANGULUS COSTAE, SULCUS COSTAE (TRANSMITTED INTERCOSTALIS VEIN, A. AND NERVE).

2. VERTEBRAE THORACICAE

FOVEA COSTALIS IN TH X-TH XI-TH XII, I.E.: PROCESSUS ARTICULARIS SUPERIOR ET INFERIOR, CORPUS VERTEBRAE, INCISURA VERTEBRALIS SUPERIOR ET INFERIOR, FORAMEN INTERVERTEBRALE, FACIES ARTICULARIS SUPERIOR ET INFERIOR, PROCESSUS SPINOSUS, PROCESSUS TRANSVERSUS, ARCUS VERTEBRAE.

TABLE OF THORACIC MUSCLES

MUSCLE	ORIGIN	INSERTION	ACTION	INNERVATION	
PECTORALIS MAJOR	CLAVICULA, STERNUM, COSTAE	SULCUS INTERTUBERCULARIS LATERALIS OS HUMERI	FLEXION, ADDUCTION, MEDIAL ROTATION OF HUMERUS	N. PECTORALIS MEDIALIS (C8-T1) ET LATERALIS (C5-C7)	R. PECTORALIS TRUNCUS THORACOACROMIALIS
PECTORALIS MINOR	COSTAE III-V	PROCESSUS CORACOIDEUS SCAPULAE	PROTRACTION AND STABILISATION OF SCAPULAE	N. PECTORALIS MEDIALIS (C8-T1)	
SERRATUS ANTERIOR	LATERAL BORDER OF COSTAE I-VIII	MARGO MEDIALIS SCAPULAE	PROTRACTION AND STABILISATION OF SCAPULAE	N. THORACICUS LONGUS (C5-C7)	A. THORACICA LATERALIS

TABLE OF THORACIC MUSCLES					
MUSCLE	**ORIGIN**	**INSERTION**	**ACTION**	**INNERVATION**	
SUBCLAVIUS	COSTA I	CLAVICULA	STABILISE CLAVICLE	NERVUS TO SUBCLAVIUS (C5-C6)	A. THORACICA SUPERIOR, R. CLAVICULARIS TRUNCUS THORACOACROMIALIS
INTERCOSTALES:					RR. INTERCOSTALES
EXTERNA	LOWER BORDER OF COSTAE	UPPER BORDER OF LOWER COSTAE	ELEVATE RIBS	SEGMENTAL INNERVATION BY NN. INTERCOSTALES TI-TII AND N. SUBCOSTALIS TI2	
INTERNA			DEPRESS RIBS		
INTIMA			DEPRESS RIBS		
TRANSVERSUS THORACIS	POSTERIOR AND LOWER COSTAE, XYPHOID	INNER SURFACES OF CARTILAGO COSTAE II-VI	DEPRESS RIBS		
SUBCOSTALIS	INNER SURFACE OF LOWER RIBS	UPPER BORDERS OF COSTAE II-III	ELEVATE RIBS		
DIAPHRAGMA	PROCESSUS XYPHOIDEUS, MARGO COSTALES, COSTA XI-XII, VERTEBRAE LUMBARES		INCREASES THORACIC CAVITY VOLUME FOR RESPIRATION	N. PHRENICUS (C3-C5)	

BLOOD SUPPLY

A. ARTERIES

1. THORACICA INTERNA, BRANCHES FROM A. SUBCLAVIA AND TRAVELS ALONG THE INTERNAL SURFACE OF THE RIB CAGE JUST LATERAL TO THE STERNUM. GIVES OFF TO A. INTERCOSTALIS ANTERIOR AND A. MUSCULOPHRENICA.
2. AA. INTERCOSTALES ANTERIORES FROM A. THORACICA INTERNA AND A. MUSCULOPHRENICA, TRAVELS POSTERIORLY TO ANASTOMOSE WITH A. INTERCOSTALIS POSTERIOR.
3. AA. INTERCOSTALES POSTERIORES: THE FIRST 2 COMES FROM A. INTERCOSTALIS SUPERIOR, THE RESTS COME FROM AORTA THORACICA.
4. A. SUBCOSTALIS, BRANCHES FROM AORTA THORACICA, TRAVELS ANTERIORLY INFERIOR TO THE 12TH RIB.

B. VEINS

1. V. THORACICA INTERNA TRAVELS ALONG THE INTERNAL SURFACE OF THE RIB CAGE JUST LATERAL TO THE STERNUM, DRAINS INTO THE V. BRACHIOCEPHALICA.
2. VV. INTERCOSTALES ANTERIORES, TRAVEL ANTERIORLY BETWEEN THE RIBS TO DRAIN INTO V. THORACICA INTERNA.
3. VV. INTERCOSTALES POSTERIOR, TRAVEL POSTERIORLY BETWEEN THE RIBS, THE FIRST 3 JOIN TO FORM V. INTERCOSTALIS SUPERIOR AND DRAIN INTO V. BRACHIOCEPHALICA; THE RESTS DRAIN INTO V. AZYGOS.

B. MEDIASTINUM

MEDIASTINUM IS A SPACE BORDERED BY THE STERNUM, THE VERTEBRAE, THE FIRST RIB AND THE DIAPHRAGM; IT IS FURTHER DIVIDED INTO SUPERIOR AND INFERIOR BY A HORIZONTAL PLANE TRAVELS AT THE LEVEL OF THE STERNAL ANGLE AND DISCUS INTERVERTEBRALIS OF TH IV-V. THE INFERIOR IS DIVIDED INTO ANTERIOR, MEDIAL AND POSTERIOR.

1. ANTERIOR MEDIASTINUM: CONTAINS FAT, AREOLAR TISSUE AND THE REMNANT OF THE THYMUS IN ADULT.
2. MEDIAL MEDIASTINUM: CONTAINS AORTA DESCENDENS, V. AZYGOS, DUCTUS THORACICUS, OESOPHAGUS, CN. X AND NN. SYMPATHETICS.
3. SUPERIOR MEDIASTINUM: SUPERIOR TO THE STERNAL ANGLE AND CONTAINS ARCUS AORTA AND ITS THREE BRANCHES, V. CAVA SUPERIOR, V. BRACHIOCEPHALICA, TRACHEA, N. PHRENICUS AND CN. X. SOMETIMES ATROPHIED THYMUS CAN BE FOUND LOOKS LIKE A FATTY MASS. IMPORTANT COMPONENT OF LYMPHATIC SYSTEM. USUALLY BEHIND MANUBRIUM STERNI BUT CAN EXTEND TO THE 4TH CARTILAGE OF THE COSTA.

C. PLEURA

CAVITAS PLEURA IS A SPACE FILLED WITH THE FLUID, 2 LAYERED MEMBRANOUS PLEURAL SAC. RECEIVED BLOOD SUPPLY FROM AA. INTERCOSTALES AND FROM BRONCHIAL CIRCULATION.

TYPES :

1. PLEURA PARIETALIS;
   - PLEURA COSTALIS
   - PLEURA MEDIASTINALIS
   - PLEURA DIAPHRAGMATICA
   - CUPULA PLEURA (PLEURA CERVICALIS)

INNERVATED BY NN. INTERCOSTALES AND N. PHRENICUS.

2. PLEURA VISCERALIS (PULMONIS), INNERVATED BY PLEXUS PULMONARIUS WITH ITS SYMPATHETIC FIBRES AND N. VAGUS.

D. PULMO & BRONCHUS

PULMONARY CIRCULATION COMES FROM TRUNCUS PULMONARIUS AND VV. PULMONALES. BRONCHIAL CIRCULATION FROM AA. BRONCHIALES AND VV. BROANCHIALES ALSO PULMONARY CAPILLARIES. THE BIFURCATIO OF TRACHEA IS CARINA, WITH LNN. TRACHEOBRONCHIALES.

LNN. BRONCHOPULMONALES ARE AT EACH HILLUM PULMONIS.

PULMO DEXTRA, 3 LOBES:

1. LOBUS SUPERIOR
2. LOBUS MEDIUS
3. LOBUS INFERIOR

HAS SULCUS OESOPHAGUS, SULCUS V. CAVA SUPERIOR, SULCUS V. AZYGOS, IMPRESSIO CARDIACA.

PULMO SINISTRA, 2 LOBES:

1. LOBUS SUPERIOR, WITH LINGULAE PULMONIS
2. LOBUS INFERIOR.

HAS SULCUS AORTICUS, SULCUS A. CAROTIS COMMUNIS, SULCUS A. SUBCLAVIA SINISTRA, IMPRESSIO CARDIACA.

BRONCHUS PRIMARIUS:

1. DEXTRA
2. SINISTRA

BRONCHUS LOBARIS:

1. DEXTRA:

AT LOBUS SUPERIOR (EPARTERIAL BRONCHUS):

- BRONCHUS SEGMENTUM APICALE
- BRONCHUS SEGMENTUM POSTERIUS
- BRONCHUS SEGMENTUM ANTERIUS

AT LOBUS MEDIUS:

- BRONCHUS SEGMENTUM LATERALE
- BRONCHUS SEGMENTUM MEDIALE

AT LOBUS INFERIOR:

- BRONCHUS SEGMENTUM APICALE (SUPERIUS)
- BRONCHUS SEGMENTUM BASALE MEDIALE (CARDIACUM)
- BRONCHUS SEGMENTUM BASALE ANTERIUS
- BRONCHUS SEGMENTUM BASALE LATERALE
- BRONCHUS SEGMENTUM BASALE POSTERIUS

2· SINISTRA:

AT LOBUS SUPERIOR:

- BRONCHUS SEGMENTUM APICOPOSTERIUS
- BRONCHUS SEGMENTUM ANTERIUS
- BRONCHUS SEGMENTUM LINGULARE SUPERIUS
- BRONCHUS SEGMENTUM LINGULARE INFERIUS

AT LOBUS INFERIOR:

- BRONCHUS SEGMENTUM APICALE (SUPERIUS)
- BRONCHUS SEGMENTUM BASALE ANTERIUS- MEDIALE
- BRONCHUS SEGMENTUM BASALE LATERALE
- BRONCHUS SEGMENTUM BASALE POSTERIUS

E· PERICARDIUM

INNERVATED BY N· PHRENICUS AND SUPPLIED BY A· PERICARDIOPHRENICA OF A· THORACICA INTERNA·

TYPES :

- PERICARDIUM FIBROSUM
- PERICARDIUM SEROSUM
  - LAMINA PARIETALIS
  - LAMINA VISCERALIS = EPICARDIUM·

F· CORDIS

STRUCTURES TO AND FROM:

1· V· CAVA SUPERIOR
2· V· BRACHIOCEPHALICA/ ANONYMA DEXTRA
3· V· BRACHIOCEPHALICA/ ANONYMA SINISTRA
3· AORTA ASCENDENS (WITH LIG· ARTERIOSUM BOTALLI)
4· V· CAVA INFERIOR
5· PULMONARY TRUNK
6· VV· PULMONALES

AT THE CORDIS, STRUCTURES:

1. BASIS CORDIS
2. MARGO ACUTUS
3. APEX CORDIS
4. MARGO OBTUSUS
5. FACIES DORSALIS
6. FACIES DIAPHRAGMATICA
7. FACIES STERNOCOSTALIS
8. SULCUS TERMINALIS
9. AURICULA DEXTRA
10. AURICULA SINISTRA
11. SULCUS LONGITUDINALIS ANTERIOR
12. SULCUS LONGITUDINALIS POSTERIOR.

CORONARY SYSTEM:

1. RAMUS INTERVENTRICULARIS ANTERIOR OF A. CORONARIA SINISTRA TRAVELS WITH V. CARDIACA MAGNA
2. RAMUS INTERVENTRICULARIS POSTERIOR OF A. CORONARIA DEXTRA TRAVELS WITH V. CARDIACA MEDIA
3. RAMUS MARGINALIS DEXTRA OF A. CORONARIA DEXTRA TRAVELS WITH V. CARDIACA PARVA
4. RAMUS CIRCUMFLEXUS A. CORONARIA SINISTRA
5. SINUS CORONARIUS, WITH VALVE OF THEBESIUS. DRAINED INTO THE RIGHT ATRIUM. RECEIVED BLOOD FROM THE GREAT CARDIAC VEIN AND THE OBLIQUE VEIN OF THE LEFT ATRIUM, MIDDLE CARDIAC VEIN, SMALL CARDIAC VEIN, POSTERIOR VEIN OF LEFT VENTRICLE AND LEFT MARGINAL VEIN.

AT THE LEFT AND RIGHT ATRIOVENTRICULAR GROOVE/ SULCUS CORONARIUS, RUNS RAMUS CIRCUMFLEXUS OF A. CORONARIA SINISTRA AND SINUS CORONARIUS WITH A. CORONARIA DEXTRA AND VV. CARDIACA PARVAE, RESPECTIVELY.

STRUCTURES FOUND AT:

1. ATRIUM DEXTER
   A. MM. PECTINATI
   B. FOSSA OVALIS, WITH ITS LIMBUS FOSSA OVALIS
   C. OSTIUM SINUS CORONARIUS
   D. SULCUS ET CRISTA TERMINALIS
2. ATRIUM SINISTER
   A. VV. PULMONALES
   B. MITRAL VALVE/ BICUSPIDAL VALVE: CUSPIS ANTERIOR, POSTERIOR
   C. SEPTUM INTERATRIALE
3. VENTRICULUS DEXTER
   A. TRICUSPIDAL VALVE: CUSPIS ANTERIOR, POSTERIOR, SEPTALIS

B. CRISTA SUPRAVENTRICULARIS
C. MM. PAPILLARES
D. TRABECULA SEPTOMARGINALIS/ MODERATOR BAND
E. SEMILUNAR VALVE OF TRUNCUS PULMONALIS: CUSPIS DEXTRA, SINISTRA, ANTERIOR
F. TRABECULA CARNAE
G. CHORDA TENDINEAE.

4. VENTRICULUS SINISTER
A. SEPTUM INTERVENTRICULARIS
B. SEMILUNAR VALVE OF THE AORTA: CUSPIS DEXTRA, SINISTRA, POSTERIOR.
WITH OSTIUM A. CORONARIA DEXTRA ET SINISTRA BELOW CUSPIS DEXTRA ET SINISTRA
C. MM. PAPILLARES
D. TRABECULA CARNAE
E. CHORDA TENDINEAE

CHAPTER 4 ABDOMEN

ABDOMEN

ACTIVITY:

IN THIS CHAPTER, STUDENTS LEARN ABOUT THE STRUCTURES OF THE ABDOMEN INCLUDING THE BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT THE ANATOMY OF HUMAN'S ABDOMEN I.E. DIAPHRAGM, ABDOMINAL WALL, HOLLOW ORGANS, ACCESSORY ABDOMINAL ORGANS.

TASK FOR STUDENTS!

1. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE AORTA ABDOMINALIS AND ITS BRANCHES!

2. DRAW A SCHEMATIC TABLE THAT GROUPS THE INTRAABDOMINAL ORGANS BASED ON THEIR LOCATION TO THE PERITONEUM!

4. ABDOMEN

ANTERIOR WALL	CONSIST OF 9 REGIONS DIVIDED BY A TRANSUMBILICAL PLANE, AN INTERTUBEROSITY PLANE AND 2 MIDCLAVICULAR LINES INTO: 1. RIGHT HYPOCHONDRIAC 2. EPIGASTRIC 3. LEFT HYPOCHONDRIAC 4. RIGHT LUMBAR 5. UMBILICAL 6. LEFT LUMBAR 7. RIGHT INGUINAL 8. PUBIC 9. LEFT INGUINAL MUSCLES & INNERVATION AT THE ANTEROLATERAL WALL: 1. OBLIQUUS ABDOMINIS EXTERNUS (ANTERIOR RAMI OF N. T7-T12) 2. OBLIQUUS ABDOMINIS INTERNUS (ANTERIOR RAMI OF N. T7-T12 AND L1) 3. TRANSVERSUS ABDOMINIS (ANTERIOR RAMI OF N. T7-T12 AND L1) 4. RECTUS ABDOMINIS (ANTERIOR RAMI OF N. T7-T12) 5. PYRAMIDALIS(ANTERIOR RAMUS OF N. T12) STRUCTURES: 1. ANNULUS INGUINALIS ABDOMINALIS (LATERALIS, PROFUNDUS) 2. FOVEA INGUINALIS (LATERALIS, MEDIALIS) 3. ANNULUS INGUINALIS SUBCUTANEUS (MEDIALIS, SUPERFICIALIS): - HERNIA INGUINALIS LATERALIS (INDIRECT) ENTRY POINT LATERAL INGUINAL FOSSAE	LAYERS IN THE ANTEROLATERAL WALL: 1. SKIN 2. SUPERFICIAL FASCIA - SUPERFICIAL FATTY LAYER (CAMPER FASCIA) - DEEP MEMBRANOUS LAYER (SCARPA FASCIA) 2. THE INVESTING FASCIA OF MM. OBLIQUUES ABDOMINIS EXTERNUS, OBLIQUUS ABDOMINIS INTERNUS, TRANSVERSUS ABDOMINIS 3. THE ENDO-ABDOMINAL FASCIA 4. EXTRAPERITONEAL FAT 5. PERITONEUM: PARIETAL & VISCERAL LAYERS INNERVATION: 1. NN. THORACOABDOMINALES (T7-T11) 2. N. SUBCOSTALIS (T12) 3. N. ILIOHYPOGASTRICUS (L1) 4. N. ILIOINGUINALIS (L1) BLOOD SUPPLY: VASCULARISATIONS I.E. BY: 1. A. MUSCULOPHRENICA AND A. EPIGASTRICA SUPERIOR (FROM A. THORACICA INTERNA) 2. AA. INTERCOSTALES POSTERIORES 10-11 (FROM AORTA) 3. A. SUBCOSTALIS, A. EPIGASTRICA INFERIOR, A. CIRCUMFLEXA ILIACA PROFUNDUS (FROM A. ILIACA EXTERNA)

	- HERNIA INGUINALIS MEDIALIS (DIRECT) ENTRY POINT MEDIAL INGUINAL FOSSAE 4. FUNICULUS SPERMATICUS (IN MALE)	4. CIRCUMFLEXA ILIACA SUPERFICIALIS AND A. EPIGASTRICA SUPERFICIALIS (FROM A. FEMORALIS)

POSTERIOR WALL	MUSCLES & INNERVATION: - PSOAS MAJOR INNERVATION: LUMBAR PLEXUS VIA ANTERIOR BRANCHES OF NERVES L2-L4 - ILIACUS INNERVATION: FEMORAL NERVE (L2-L4) - QUADRATUS LUMBORUM INNERVATION: ANTERIOR BRANCHES OF T12 AND L1-L4 NERVES BLOOD SUPPLY I.E.:	VERTEBRAE: VERTEBRA LUMBALIS I-V FORAMEN VERTEBRALE OF LUMBAR: TRIANGULAR; LARGER THAN IN THORACIC VERTEBRAE AND SMALLER THAN IN CERVICAL VERTEBRAE.; FORAMEN VERTEBRALE OF THORACICAE: CIRCULAR AND SMALLER THAN THOSE IN CERVICAL AND LUMBAR REGIONS. STRUCTURES.: PROCESSUS ARTICULARIS SUPERIOR ET INFERIOR, CORPUS VERTEBRAE, INCISURA VERTEBRALIS SUPERIOR ET INFERIOR, FORAMEN INTERVERTEBRALE, FACIES ARTICULARIS SUPERIOR ET INFERIOR, PROCESSUS SPINOSUS, PROCESSUS TRANSVERSUS, ARCUS VERTEBRAE. PROCESSUS MAMMILLARIS ET ACCESSORIUS. SACRUM, I.E.: FACIES PELVICA, FACIES DORSALIS, FORAMINA SACRALIA ANTERIORA, FACIES AURICULARIS (THAT ARTICULATES WITH FACIES AURICULARIS OF OSSIS ILIUM), FORAMINA SACRALIA POSTERIORA, CANALIS SACRALIS, HIATUS SACRALIS. PROMONTORIUM. COCCYGIS (I-IV).

DIAPHRAGMA SS	FORMED BY MUSCULOAPONEUROSIS TISSUE HAS 3 PARTS: 1. A STERNAL PART 2. A COSTAL PART 3. A LUMBAR PART HAS 3 LIGAMENTS: 1. MEDIAN ARCUATE LIGAMENT 2. MEDIAL ARCUATE LIGAMENT 3. LATERAL ARCUATE LIGAMENT PIERCED BY STRUCTURES AT: 1. LEVEL TVIII BY V. CAVA INFERIOR 2. LEVEL TX BY OESOPHAGUS 3. LEVEL TXII BY AORTA	INNERVATION: THE ENTIRE MOTOR SUPPLY TO THE DIAPHRAGM IS FROM THE RIGHT AND LEFT N. PHRENICUS, EACH OF WHICH IS DISTRIBUTED TO HALF OF THE DIAPHRAGM AND ARISES FROM THE ANTERIOR RAMI OF THE C3-C5 SEGMENTS OF THE SPINAL CORD (FIG. 2.56C). THE N. PHRENICUS ALSO SUPPLY SENSORY FIBERS (PAIN AND PROPRIOCEPTION) TO MOST OF THE DIAPHRAGM. PERIPHERAL PARTS OF THE DIAPHRAGM RECEIVE THEIR SENSORY NERVE SUPPLY FROM THE INTERCOSTAL NERVES (LOWER SIX OR SEVEN) AND THE SUBCOSTAL NERVES. BLOOD SUPPLY: - SUPERIOR SURFACE : - A. PHRENICA SUPERIOR FROM AORTA THORACICA - PERICARDIACOPHRENIC ARTERIES AND MUSCULOPHRENIC ARTERIES FROM A. THORACICA INTERNA - INFERIOR SURFACE : INFERIOR PHRENIC ARTERIES FROM AORTA ABDOMINALIS

TRACTUS DIGESTIVUS/ HOLLOW ORGANS OF THE ABDOMEN		
FEATURES	**SIGNIFICANCE**	**OTHER INFORMATION**
ESOPHAGUS (RETRO PERITONEUM)	SUPERIOR FROM THE GASTER, AT THE SUPERIOR POSTERIOR MEDIASTINUM.	THE ESOPHAGUS IS A MUSCULAR TUBE, APPROXIMATELY 25 CM (10 IN) LONG WITH AN AVERAGE DIAMETER OF 2 CM, THAT EXTENDS FROM THE PHARYNX TO THE STOMACH INNERVATION: CERVICAL PART: PLEXUS PHARYNGEALIS (N. IX +

		N·X + TRUNCUS SYMPHATICUS PARS CERVICALIS) THORACIC AND ABDOMINAL PART: PLEXUS ESOPHAGEALIS (FIBERS FROM TWO VAGUS NERVES) → ANTERIOR & POSTERIOR VAGAL TRUNK MOTORIC: N· X SENSORY: NORMAL RYTHM: N· X PAIN: N· SPLANCHNICUS & TRUNCUS SYMPHATICUS PARS CERVICALIS·

GASTER
(INTRA PERITONEUM)
	PARTS:
	1· FUNDUS
	2· BODY
	3· CARDIA
	4· PYLORUS
	
	VASCULARISATION:
	1· A· GASTRICA DEXTRA
	2· A·GASTRICA SINISTRA
	3· A·GASTRODUODENALIS
	4· A· GASTROEPIPLOICA/ OMENTALIS DEXTRA ET SINISTRA
	5· A· GASTRICA BREVIS
		STRUCTURES:
		• OMENTUM MINUS:
		  ○ LIGAMENTUM HEPATOGASTRICA
		  ○ LIGAMENTUM HEPATODUODENALE
		• OMENTUM MAJUS:
		  ○ LIGAMENTUM GASTROPHRENICUM
		  ○ LIGAMENTUM GASTROSPLENICUM
		• LIGAMENTUM GASTROCOLICA
		• VIA GASTRICA/ MAAGENSTRAASE
		• PLICA GASTRICA (RUGAE GASTRICA)
		• M· SPHINCTER PYLORI
		• FORAMEN EPIPLOICA/ OMENTALIS (WINSLOWI) INTO GREATER SAC
		• LIGAMENTUM HEPATODUODENALE, TRANSMITS THROUGH BY OMENTUM MINUS
		INNERVATION:
		AUTOMATIC NERVOUS SYSTEM:
		SYMPATHETIC FIBERS FROM PLEXUS COELIACUS (FROM N·

		SPLANCHNICUS) PARASYMPATHETIC FIBERS FROM VAGAL TRUNK (ANTERIOR AND POSTERIOR).
INTESTINUM TENUE	PARTS: 1.DUODENUM: (4) - SUPERIOR (INTRAPERITONEUM) - DESCENDENS (RETROPERITONEUM) - HORIZONTAL (RETROPERITONEUM) - ASCENDENS (RETROPERITONEUM) PAPILLA DUODENI MAJOR VATER PAPILLA DUODENI MINOR LIGAMENTUM TREITZ, BORDER BETWEEN DUODENUM AND JEJUNUM 2. JEJUNUM (INTRAPERITONEUM) PLICA CIRCULARIS KERKRINGI 3. ILEUM, MEETS THE CAECUM AT RIGHT INGUINAL REGION, WITH ILEOCECAL SPHINCTER AND ILEOCECAL ORIFICE (INTRAPERITONEUM) VALVULA ILEOCAECALIS/ ILEOCOLICA BAUHINI PAYER'S PATCHES IN JEJUNOILEUM AS INNATE	CHARACTERS: RADIX MESENTERII INNERVATION: ▪ PARASYMPATHETIC INNERVATION FROM THE VAGUS ▪ SYMPATHETIC INNERVATION FROM THE GREATER AND LESSER SPLANCHNIC NERVES BLOOD SUPPLY: THE ARCADES IN THE JEJUNUM AND ILEUM DIFFERS AS: JEJUNUM : LONG VASA RECTA AND A FEW LARGE LOOPS ARCADES ILEUM : SHORT VASA RECTA AND MANY SHORT LOOPS ARCADES INNERVATION: DUODENUM: CELIAC AND PLEXUS MESENTERICA SUPERIOR ANTERIOR & POSTERIOR VAGUS NERVE GREATER AND LESSER (ABDOMINOPELVIC) SPLANCHNIC NERVES BY WAY OF THE JEJUNUM AND ILEUM: • NERVES: • EXTRINSIC (FROM & TO CNS): VISCERAL AFFERENT & EFFERENT (SYMPATHETIC & PARASYMPATHETIC) • INTRINSIC (ENTERIC NERVOUS SYSTEM): MEISSNER (SUBMUCOSAL) & AUERBACH

	IMUNITY	(INTRAMUSCULAR) • EXTRINSIC INNERVATION: • PARASYMPATHETIC: NERVUS VAGUS → POSTERIOR VAGAL TRUNK SYMPATHETIC: PLEXUS MESENTERICUS SUPERIOR THROUGH THE SYMPATHETIC TRUNKS AND THORACIC ABDOMINOPELVIC (GREATER, LESSER, AND LEAST) SPLANCHNIC NERVES.
INTESTINUM CRASSUM	PARTS: 1. CAECUM (INTRAPERITONEUM) 2. APPENDIX VERMIFORMIS, MESOAPPENDIX (INTRAPERITONEUM) 3. COLON: - ASCENDENS (RETROPERITONEUM) - TRANSVERSUM (INTRAPERITONEUM) - DESCENDENS (RETROPERITONEUM) - FLEXURA COLI DEXTRA ET SINISTRA (INTRAPERITONEUM) - SIGMOID (INTRAPERITONEUM) 5. RECTUM (2/3 INFERIOR IS RETROPERITONEUM). PLICA TRANSVERSALIS RECTI, COLUMNA RECTI MORGAGNI, WITH LINE THROUGH ITS BASED (LINEA DENTATA). 6. ANUS:	CHARACTERISTICS: TAENIA COLI, 3 TYPES: - MESOCOLICA - LIBERAE - OMENTALIS HAUSTRA APPENDICES EPIPLOICAE PLICA SEMILUNARIS BLOOD SUPPLY: - A. MESENTERICA SUPERIOR - A. MESENTERICA INFERIOR. INNERVATION 1-3: - SYMPATHETIC: N. SPLANCHNICUS MAJOR, N. SPLANCHNICUS MINOR, DAN N. SPLANCHNICUS LUMBALIS - PARASYMPATHETIC: N. SPLANCHNICUS PELVICUS INNERVATION OF RECTUM AND ANAL CANAL: o SYMPATHETIC: ▪ PLEXUS MESENTERICUS INFERIOR ▪ SUPERIOR HYPOGASTRIC PLEXUS o PARASYMPATHETIC:

	SPHINCTERS ANI INTERNUS AND EXTERNUS SINUS RECTI ANALIS	▪ N. SPLANCHNICUS PELVICI (AFFERENT) ▪ N. PUDENDUS (SPHINCTER)
SYSTEMA DIGESTIVUS ACESSORIUS		
FEATURES	**SIGNIFICANCE**	**OTHER INFORMATION**
HEPAR/ LIVER (INTRA PERITONEUM)	LOBES: 1. DEXTER 2. SINISTER 3. CAUDATUS 4. QUADRATUS PARS AFFFIXA/ BARE AREA/ AREA NUDA MEANS AREA WITHOUT PERITOENAL COVERING. LIGAMENTUM VENOSUM ARANTII IS A DUCTUS VENOSUS IN FETUS. LIGAMENTUM TERES HEPATIS IS A V. UMBILICALIS IN FETUS. LIGAMENTUM FALCIFORME HEPATIS CONNECTS THE LIVER TO RECESSUS SUBPHRENICUS.	STRUCTURES AT THE PORTA HEPATIS: 1. V. CAVA INFERIOR 2. A, HEPATICA PROPRIAE 3. V. PORTA 4. DUCTUS HEPATICUS ORGANS SURROUNDING THE LIVER: • RIGHT SIDE OF THE ANTERIOR ASPECT OF THE STOMACH—GASTRIC AND PYLORIC AREAS • SUPERIOR PART OF THE DUODENUM—DUODENAL AREA • OMENTUM MINUS • VESSICA FELLEA—FOSSA FOR VESSICA FELLEA • RIGHT COLIC FLEXURE AND RIGHT TRANSVERSE COLON—COLIC AREA • RIGHT KIDNEY AND SUPRARENAL GLAND—RENAL AND SUPRARENAL AREAS
LIEN/ SPLEEN (INTRAPERITONEUM)	HILLUM LIENALE: 1. A. LIENALIS 2. V. LIENALIS	INCISSURA LIENALIS, LIES AT MARGO SUPERIOR LIENALE.
VESICA FELLEA/ GALL BLADDER (INTRAPERITONEUM)	PARTS: 1. FUNDUS 2. CORPUS 3. COLLUM	DUCTUS CYSTICUS THAT JOIN DUCTUS HEPATICUS COMMUNIS TO BECOME DUCTUS CHOLEDOCUS.

	PLICA SPIRALIS	
PANCREAS	PARTS: 1· CAPUT 2· COLLUM 3· CORPUS (ALL RETROPERITONEUM) 4· CAUDA (INTRAPERITONEUM)	DUCTUS: 1· PANCREATICUS MAJOR (WIRSUNGI) 2·PANCREATICUS ACCESSORIUS (SANTORINI)
BLOOD SUPPLY	AORTA ABDOMINALIS, BRANCHES: **1·** Three anterior unpaired branches passing to the viscera: (a) the coeliac axis—giving off the hepatic artery, splenic artery, left gastric artery (b) the superior mesenteric artery (c) the inferior mesenteric artery 2· Three lateral paired branches passing to viscera: (a) the suprarenal artery (b) the renal artery (c) the testicular or ovarian artery 3· Five lateral paired branches to the parietes: (a) the inferior phrenic artery (b) four lumbar branches 4· Terminal branches: (a) the common iliacs (b) the median sacral artery·	1· TRUNCUS COELIACUS HAS TRIPUS HALLERI: - A· GASTRICA SINISTRA - A· LIENALIS - A· HEPATICA COMMUNIS 2· A· MESENTERICA SUPERIOR: - AA· INTESTINALES (JEJNUNALES ET ILEI) - A· ILEOCOLICA - A· COLICA DEXTRA - A· COLICA MEDIA 3· A· MESENTERICA INFERIOR: - A· COLICA SINISTRA - AA· SIGMOIDEA - A· RECTALIS/ HEMMORHOIDALIS SUPERIOR·

CHAPTER 5 PELVIS AND PERINEUM

PELVIS AND PERINEUM

ACTIVITY:

IN THIS CHAPTER, STUDENTS LEARN ABOUT THE STRUCTURES OF THE PELVIS INCLUDING THE BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT THE ANATOMY OF HUMAN'S PELVIS AND PERINEUM I.E. PELVIC WALL, UROGENITAL DIAPHRAGM, REPRODUCTIVE ORGANS IN MALE AND FEMALE, URINARY ORGANS, PERINEUM STRUCTURES.

TASK FOR STUDENTS!

1· DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE DIAPHRAGMA PELVIS AND ITS COMPONENTS!

2· DRAW A COMPLETE SCHEMATIC TABLE OF THE STRUCTURES COMPRISE THE GENITALIA MASCULINA ET FEMININA!

3·DRAW A COMPLETE SCHEMATIC TABLE OF THE STRUCTURES OF TRACTUS URINARIUS!

4·DRAW COMPLETE SCHEMATOC TABLE OF PELVIS AND PERINEUM MUSCLES WITH ITS INNERVATION!

5. PELVIS AND PERINEUM

TRACTUS GENITALIA MASCULINA

1. INTERNAL GENITALIA

FEATURES	SIGNIFICANCE	OTHER INFORMATION
GLANDULA PROSTATA	- UNIQUE IN ITS POSITION, SHAPE, FACIES, THE BASE AND THE APEX (WITH THE DIAPHRAGMA UROGENITALE THAT PASSED NEAR IT). - FIVE LOBES, THE MIDDLE LOBE IS LOCATED IN BETWEEN SUPEROMEDIAL LOBULE AND INFEROPOSTERIOR LOBULE - THIS GLAND ENDS INTO DUCTULI PROSTATICUS AT THE SINUS PROSTATICUS.	INNERVATION: - SYMPATHETIC : N. SPLANCHNICUS LUMBALIS AND THE PLEXUS HYPOGASTRICUS DAN PLEXUS PELVICUS - PARASIMPATHETIC : N. SPLANCHNICUS PELVICUS DAN PLEXUS HIPOGASTRICUS-PELVICUS BLOOD SUPPLY: GLANDULA PROSTATA IS SUPPLIED BY A. VESICALIS CAUDALIS, A. RECTALIS MEDIA, AND A. PUDENDA INTERNA.
GLANDULA VESICULOSA	ALSO KNOWN AS VESICULA SEMINALIS.	AT THE POSTERIOR SIDE OF VESICA URINARIA.
DUCTUS DEFERENS	- STARTS AS TUBULUS SEMINIFERUS AT THE TESTIS, WHICH FLOWS INTO RETE TESTES AND INTO DUCTULI EFFERENTES. - DUCTULI EFFERENTES CONTINUE TO THE CAPUT EPIDIDYMIS-CORPUS EPIDIDYMIS-CAUDA EPIDIDYMIS, AND THEN TO DUCTUS EPIDYDIMIS AND BECOMES DUCTUS DEFERENS.	BLOOD SUPPLY: - DUCTUS DEFERENS IS SUPPLIED BY A. DEFERENTIALIS AND A. HEMORRHOIDALIS MEDIA.

	- DUCTUS DEFERENS PASSED BY ANNULUS INGUINALIS SUPERFICIAL TO ANNULUS INGUINALIS PROFUNDUS VIA CANALIS INGUINALIS TO ARRIVE IN THE PELVIC CAVITY. - AFTER CROSSING THE URETERS AT ITS DISTAL END, DUCTUS DEFERENS FORM A BULB CALLED AMPULLA DUCTUS DEFERENS DUCTUS DEFERENS ENDS ARE BECOMING ONE WITH THE ENTRY CANAL OF VESICULA SEMINALIS TO FORM DUCTUS EJACULATORIUS THAT PIERCED GLANDULA PROSTATA TO END IN THE EDGE OF COLLICULUS SEMINALIS.	
FUNICULUS SPERMATICUS	FUNICULUS SPERMATICUS CONTAINS: 1. VAS DEFERENS 2. A. TESTICULARIS 3. PLEXUS VENOSUS PAMPINIFORMIS 4. N. GENITOFEMORALIS R. GENITALIS FOR M. CREMASTER 5.OTHER STRUCTURES LYMPHNODES, A. DEFERENTIALIS, A. CREMASTERICA.	RUNS INSIDE THE INGUINAL RING WITH N. ILIOINGUINALIS.

TESTIS AND EPYDIDIMIS	- LAMINA OF TESTES: TUNICA VAGINALIS PARS PARIETALIS ET VISCERALIS· - AT THE LONGITUDINAL SECTION, I·E·: CORTEX TESTES, MEDIASTINUM, RETE, AND EPIDIDYMIS THAT IS LOCATED AT TUNICA VAGINALIS OF THE TESTES·	- TESTIS IS SUPPLIED BY A· SPERMATICA INTERNA· - EPIDIDYMIS IS SUPPLIED BY BRANCHES OF A· SPERMATICA INTERNA·
GLANDULA BULBO URETHRALIS	- RESIDES AT THE DEEP PERINEAL POUCH IN MALES·	-

2· EXTERNAL GENITALIA

FEATURES	SIGNIFICANCE	OTHER INFORMATION
SCROTUM	- LAYERS OF THE SCROTUM: CUTIS AND SUBCUTIS (TUNICA DARTOS) - CONTENT OF THE SCROTUM INCLUDING TESTES AND THE EPYDIDIMIS·	BLOOD SUPPLY OF SCROTUM & TESTIS: o PARS VENTRAL : A· PUDENDALIS EXTERNA o PARS DORSAL : A· SCROTALIS POSTERIOR o A· SPERMATICA INTERNA o THE VEINS TRAVEL ALONG WITH THE ARTERIES· INNERVATION : o PARS VENTRALIS: N· ILIOINGUINALIS DAN R· GENITALIS N· GENITOFEMORALIS o PARS DORSALIS: N· SCROTALIS POSTERIOR DAN N· CUTANEUS FEMORIS DORSALIS (R· PERINEALIS)·

PENIS AND URETHRA	- STRUCTURES INCLUDED GLANS PENIS, FRENULUM, PREPUTIUM, FOSSA NAVICULARE, THE BASE, CORPUS PENIS AND RADIX PENIS. - BUILT FROM ERECTILE TISSUE OF CORPUS CAVERNOSUM AND CORPUS SPONGIOSUM	BLOOD SUPPLY OF THE SKIN COMES FROM A. PUDENDA EXTERNA SUPERFICIALIS OF A. FEMORALIS, WHICH IS BRANCHED INTO R. DORSOLATERAL AND VENTROLATERAL. INNERVATION COMES FROM N. ILIOINGUINALIS, N. PERINEALIS, N. PUDENDUS THAT RUNS TOGETHER WITH THE SYMPATHETIC (T12-L1) AND PARASYMPATHETIC FIBRES (S2-S4).

B. TRACTUS GENITALIA FEMININA

1. INTERNAL GENITALIA

1. OVARIUM

- DULL WHITE, OVOID SHAPE
- PRODUCE OVUM & HORMONES
- LIE ON THE LATERAL PELVIC WALL, JUST INFERIOR TO THE PELVIC INLET
- CONSIST OF DENSE FIBROUS TISSUE IN WHICH OVA ARE EMBEDDED
- SIZE ARE VARIES DUE TO REPRODUCTIVE STATE
- SURFACES: LATERAL & MEDIAL
- EXTREMITIES: SUPERIOR & INFERIOR
- BORDERS: ANTERIOR & POSTERIOR.
- LIGAMENTS:
  1. MESOVARIUM:
     POSTERIOR EXTENSION OF BROAD LIGAMENT, SUSPENDS OVARIES IN THE PELVIC CAVITY
  2. LIGAMENTUM SUSPENSORIUM OVARII
     FROM SUPERIOR EXTREMITY, CONTAINS OVARIAN VESSELS & NERVES
  3. LIGAMENTUM OVARII PROPRIUM:
     FROM INFERIOR EXTREMITY TO UTERUS, CONTAINS SMOOTH MUSCLE.
- ARTERIES
- A. OVARICA (FROM THE AORTA ABDOMINALIS)
- OVARIAN BRANCH OF A. UTERINA
- VEINS
- PLEXUS PAMPINIFORMIS TO THE OVARIAN VEINS→ V. CAVA INFERIOR (LEFT SIDE VIA V. RENALIS SINISTRA)
- LYMPH DRAINAGE: PARA AORTIC NODES
- NERVES: PLEXUS OVARICUS
  - SYMPHATIC: N. SPLANCHNICUS MINOR
  - PARASYMPHATIC: N. SPLANCHNICUS PELVIC.

2· TUBA UTERINA FALOOPII, PARS INTRAMURAL, ISTHMUS, AMPULLA (MOST COMMON SITE FOR FERTILISATION) AND FIMBRIAE·

3· UTERUS,

- FUNDUS UTERI
- CORPUS UTERI
- CAVITAS UTERI INSIDE
- SOME STRUCTRURES IN ITS LATERAL MARGIN
- ISTHMUS UTERI
  - ORIFICIUM UTERI INTERNUM
- CERVIX UTERI
  - PORTIO SUPRA VAGINALIS CERVICIS
  - PORTIO VAGINALIS CERVICIS (PORTIO)
- UTERINE CAVITY
  - OSTIUM UTERINE TUBAE
  - ORIFICIUM UTERI INTERNUM
- CERVICAL CANAL
- ORIFICIUM UTERI INTERNA
- ORIFICIUM UTERI EXTERNA
- LIGAMENTS:
  - BROAD LIGAMENT: MESOSALPHINX, MESOVARIUM, MESOMETRIUM
  - LIG· TERES UTERI
  - LIG· CARDINALE
  - LIG· UTEROOVARICUM
- ARTERIES
  - UTERINE ARTERY
- VEINS
  - PLEXUS VENOSUS UTERINE (HAS CONNECTION TO V· RECTALIS SUPERIOR)
- LYMPH DRAINAGE: PARA AORTIC, EXTERNAL ILIAC, INGUINAL NODES VIA OVARIAN VESSELS TO THE PARA-AORTIC NODES; VIA UTERINE VESSELS TO THE INTERNAL ILIAC CHAIN
- NERVES: PLEXUS UTEROVAGINALIS· PARASYMPATHETIC: N· VAGUS (LATERAL HALF) AND N· SPLANCHNICUS PELVICI (MEDIAL HALF); SYMPATHETIC: LESSER AND LUMBAR SPLANCHNIC NN·

4· VAGINA

HAS A HYMEN ATTACHED AT THE CAUDAL PART, WHILST THE FORNIX ENCIRCLES THE PORTIO·

- ARTERIES
  - A· UTERINA
  - A· VAGINALIS
  - A· BULBI VESTIBULI

- VEINS
    - PLEXUS VENOSUS VAGINALIS
- LYMPH DRAINAGE: PARA AORTIC, EXTERNAL ILIAC, INGUINAL NODES
- NERVES: PLEXUS UTEROVAGINALIS

2. EXTERNAL GENITALIA

FEATURES		
A. MONS PUBIS B. LABIUM MINUS: VAGINA VESTIBULE C. LABIUM MAJUS: RIMA PUDENDA D. COMMISURA ANTERIOR E. PREPUTIUM CLITORIDIS F. CLITORIS G. FRENULUM CLITORIDIS H. ORIFICIUM URETHRAE EXTERNUM I. ORIFICIUM VAGINAE J. FRENULUM LABIORUM PUDENDA/ MINORUM K. FOSSA NAVICULARIS VAGINAE L. COMMISURA POSTERIOR M. BULBUS VESTIBULI N. GLANDULA VESTIBULARIS MAJOR BARTHOLIN IN SUPERFICIAL PERINEAL POUCH O. GLANDULA VESTIBULARIS MINOR	FEMALE EXTERNAL GENITAL ORGANS: VULVA= PUDENDUM	STRUCTURES: - M. BULBOSPONGIOSUS - M. ISCHIOCAVERNOSUS - BULBUS VESTIBULI - VULVA - VESTIBULUM ARTERIES: A. PUDENDA INTERNA, A. LABIALIS, CLITORIS ARTERIES VEINS: V. PUDENDA INTERNA LYMPH DRAINAGE: INGUINAL, INTERNAL ILIAC NODES NERVES: LUMBAL (ANTERIOR PART OF GENITALIA) AND PLEXUS SACRALIA (POSTERIOR PART OF GENITALIA).

TRACTUS URINARIUS

COMPRISED OF THE KIDNEY AND ITS URETER, ALSO AT THE VESICA URINARIA AND THE URETHRA IN THE PELVIC CAVITY.

REN

THE LEFT KIDNEY IS LOCATED HIGHER THAN THE RIGHT ONE. SHAPE LIKE A BEAN, HAS:

- 2 POLES: SUPERIOR AND INFERIOR
- 2 EDGES: MEDIAL AND LATERAL
- 2 FACIES: ANTERIOR AND POSTERIOR

STRUCTURES OF HILUS RENALIS:

- A. RENALIS, COMES FROM AORTA ABDOMINALIS
- V. RENALIS, DRAINS TO V. CAVA INFERIOR
- URETER.

STRUCTURES IN EACH KIDNEY:

- SINUS RENALIS
- PELVIS RENALIS
- CALYX MAJOR
- CALYX MINOR
- MEDULLA/ PYRAMID RENALIS (APEX AND BASE)
- APEX PYRAMID THAT ENDS IN THE CALYX MINOR PAPILLA RENALIS
- CORTEX RENALIS, THE AREA THAT GOES INTO THE MEDULLA AND IN BETWEEN THE PYRAMIDES CALLED COLUMNA RENALIS
- A. INTERLOBARIS, A. ITERLOBULARIS, AA. ARCUATAE, WITH THE VEINS

THE LOCATION OF VARIOUS STRUCTURES TO THE LEFT KIDNEY:

- GLANDULA SUPRARENALIS SINISTRA: CRANIAL REN
- GASTER: CRANIAL REN
- LIEN AND VASA LIENALIS: ANTEROLATERAL REN
- CAUDA PANCREAS: ANTERIOR REN
- JEJUNUM: ANTERIOR REN
- FLEXURA COLI SINISTRA: LATERAL REN
- COLON DESCENDENS: LATERAL REN
- DIAPHRAGMA: CRANIAL REN
- M. PSOAS MAJOR: POSTERIOR REN
- VASA RENALIS SINISTRA: MEDIAL REN
- PELVIS RENALIS SINISTRA: MEDIAL REN
- URETER: INFEROMEDIAL REN.

THE LOCATION OF VARIOUS STRUCTURES TO THE RIGHT KIDNEY:

- GLANDULA SUPRARENALIS DEXTRA: CRANIAL REN
- HEPAR LOBUS DEXTRA: CRANIAL REN
- DUODENUM PARS DESCENDENS: ANTERIOR REN

- JEJUNUM: ANTERIOR REN
- FLEXURA COLI DEXTRA: ANTERIOR REN
- DIAPHRAGMA: CRANIAL REN
- M· PSOAS MAJOR: POSTERIOR REN
- VASA RENALIS DEXTRA: MEDIAL REN
- PELVIS RENALIS DEXTRA: MEDIAL REN
- URETER: INFEROMEDIAL REN

VESICA URINARIA

VENTRAL TO:

IN MALE – RECTUM, IN FEMALE – UTERUS·

SHAPE AS TETRAHEDRAL IF EMPTY, HAS:

1· APEX

2· FUNDUS/ BASE

3· COLLUM·

VESICA URINARIA HAS 3 FACIES: SUPERIOR, INFEROLATERAL DEXTRA AND SINISTRA; AND 3 MARGINS/ EDGES: LATERAL DEXTRA AND SINISTRA, ANTERIOR AND POSTERIOR·

SIGNIFICANCES:

1· LIG· VESICOUMBILICALE MEDIANUM, THAT IS A REMNANT OF EMBRYONIC URACHUS

2 LIG· VESICOUMBILICALE MEDIALE, THAT IS A REMNANT OF FETAL UMBILICAL ARTERIES

3· URETER (DEXTRA ET SINISTRA)

4· TRIGONUM VESICAE LIEUTAUDI, THAT HAS A DIFFERENT MUCOSA MEMBRANE TO OTHER SURFACE DUE TO ITS EMBRYOLOGICAL SOURCE OF CAUDAL END OF MESONEPHRIC DUCTS (MESODERMAL) THAT IS DIFFERENT FROM THE OTHER WALL THAT GROWTH FROM ENDODERMAL·

5· ORIFICIUM URETERIS AT THE SUPERIOR ANGLE OF TRIGONUM VESICA URINARIA

6· ORIFICIUM URTEHRAE INTERNUM AT THE BASE OF THE TRIGONE·

7· IN MALE, AT THE POSTERIOR FACIES RESIDED:

THE DUCTUS DEFERENS WITH ITS AMPULLA, AND VESICULA SEMINALIS·

URETER

THE URETER PARS ABDOMINALIS IS RETROPERITONEAL, TRAVELS INFERIORLY AT THE MEDIAL SIDE OF M· PSOAS MAJOR· AFTER ENTERING THE PELVIC CAVITY, THE URETER TRAVELS TO THE CAUDAL SIDE OF LATERAL PELVIC WALL, COVERED BY THE PERITONEUM· AT THE LEVEL OF SPINA ISCHIADICA, URETER TURNS TO THE VENTROMEDIAL AND THE REACHES THE DORSAL SIDE OF VESICA URINARIA APPROXIMATELY 4 CM CRANIAL FROM THE TUBERCULUM PUBICUM·

THERE ARE 3 PHYSIOLOGICAL NARROWING OF THE URETER WHERE MOST COMMON SITES OF RENAL CALCULUS OBSTRUCTION:

1. TRANSITION FROM THE PELVIS RENALIS INTO THE URETER—PELVIURETERIC JUNCTION

2. TRANSITION FROM URETER PARS ABDOMINALIS TO PARS PELVINA WHEN CROSSING BIFURCATIO OF A. ILIACA COMMUNIS AT THE LEVEL OF L IV
3. WHEN GOES INSIDE THE VESICA URINARIA.

URETHRA
IN MALE, STRUCTURES:
1. URETHRA PARS PREPROSTATICA
2. URETHRA PARS PROSTATICA
3. URETHRA PARS MEMBRANACEA, TRANSMITS THROUGH DIAPHRAGMA UROGENITALE
4. URETHRA PARS SPONGIOSA THAT TRANSMITS IN CORPUS SPONGIOSUM PENIS
5. FOSSA NAVICULARIS URETHRAE TO ORIFICIUM (OSTIUM) URETHTRAE EXTERNUM.

IN FEMALE, URETHRA IS SHORTER AND CONNECTED TO THE TRIGONUM UROGENITALE, AND SURROUNDED BY M. COMPRESSOR URETHRAE AND M. URETHROVAGINALE

PELVIS AND PERINEUM
1. APERTURA PELVICA SUPERIOR (PELVIC INLET) FORMED BY MARGO SUPERIOR SYMPHYSIS PUBIS, POSTERIOR SIDE OF PUBIC CREST, PECTEN OSSIS PUBIS, LINEA ARCUATA, MARGO ANTERIOR ALA OSSIS SACRUM, AND THE PROMONTORIUM.
2. APERTURA PELVICA INFERIOR (PELVIC OUTLET) FORMED BY MARGO ANTERIOR SYMPHYSIS PUBIS AT THE ANTERIOR SIDE, RAMI INFERIOR OSSIS PUBIS AND TUBER ISCHIADICUM AT THE ANTEROLATERAL SIDE; BY LIGAMENTUM SACROTUBEROSUM AT THE POSTEROLATERAL SIDE, AND TIPS OF COCCYGEUS AT THE POSTERIOR SIDE.
BY PELVIC INLET, THE PELVIC CAVITY IS DIVIDED INTO GREATER AND LESSER PELVIS (FALSE PELVIS AND TRUE PELVIS, RESPECTIVELY).

PELVIC MUSCLES:
1. LATERAL WALL: M. OBTURATOR INTERNUS (INNERVATED BY THE NERVE FOR M. OBTURATOR INTERNUS L5, S1, S2)
2. SUPEROPOSTERIOR WALL: M. PIRIFORMIS (INNERVATED BY RAMI ANTERIOR S1 DAN S2)
3. FLOOR: M. LEVATOR ANI (MM. PUBORECTAL, PUBOCOCCYGEUS, ILIOCOCCYGEUS) INNERVATED BY NERVE FOR M. LEVATOR ANI (FROM S4), N. ANALIS INFERIOR, PLEXUS COCCYGEUS; WHILST M. COCCYGEUS (ISCHIOCOCCYGEUS) IS INNERVATED BY RR. S4-S5. THE FLOOR IS ALSO CALLED DIAPHRAGMA PELVIS.

VASCULARISATION OF THE PELVIC CAVITY:
a. A. ILIACA INTERNA SUPPLIES PELVIS MINOR
b. A. OVARICA
c. A. SACRALIS MEDIANA
d. A. RECTALIS SUPERIOR.

PERINEUM

A SPACE BETWEEN ANUS AND EXTERNAL GENITALIA INCLUDING CORPUS PERINEALIS AND SURROUNDING STRUCTURES. AN INTERCONNECTING AN IMAGINARY LINE BETWEEN 2 TUBEROSITAS ISCHIADICUM, THUS DIVIDES THIS AREA INTO TRIGONUM UROGENITALE AND TRIGONUM ANALE.

BLOOD SUPPLY COMES FROM A. PERINEALIS, A. DORSALIS PENIS (CLITORIS) AND A. PROFUNDA PENIS (CLITORIDIS) OF A. PUDENDA INTERNA.

INNERVATIONS ARE FROM N. PERINEALIS, N. SCROTALIS (LABIALIS) POSTERIOR, DORSALIS PENIS OR CLITORIDIS.

THERE ARE TWO REGIONS HERE, WHICH SUPPORTS THE STRUCTURES OF DIAPHRAGMA UROGENITALE. THESE AREAS ARE:

1. SUPERFICIAL PERINEAL POUCH CONTAINING: M. BULBOCAVERNOSUS, M. ISCHIOCAVERNOSUS, M. TRANSVERSUS PERINEI SUPERFICIALIS, CORPUS CAVERNOSUM, CORPUS SPONGIOSUS, AA. SCROTALIS (LABIALIS) POSTERIOR, A. BULBI (VESTIBULI), A. URETHRALIS, N. SCROTALIS (LABIALIS) POSTERIOR, CRUS PENIS/ CLITORIS, GLANDULA BARTHOLIN, BULBUS PENIS/ CLITORIDIS.

2. DEEP PERINEAL POUCH CONTAINS: M. TRANSVERSUS PERINEI PROFUNDUS, M. SPHINCTER URETHRA EXTERNA, M. COMPRESSOR URETHRAE AND PHINCTER URETHROVAGINAL IN FEMALES, URETHRAE PARS MEMBRANACEA, GLANDULA BULBOURETHRALIS, VAGINA IN FEMALES.

A. ILIACA COMMUNIS, COMES FROM THE AORTA ABDOMINALIS BIFURCATIO AT THE ANTERIOR LEVEL OF VERTEBRA LIV. BRANCHED INTO A. ILIACA INTERNA AND A. ILIACA EXTERNA. A. ILIACA EXTERNA RUNS BELOW LIG. INGUINALE TO BE A. FEMORALIS (BRANCHED AS A. EPIGASTRICA INFERIOR), AFTER GIVING OFF A. CIRCUMFLEXA ILIACA EXTERNA. A. ILIACA INTERNA, BRANCHED INTO:

1. ANTERIOR DIVISION (A. UMBILICALIS WHICH RUNS INFERIORLY GIVING OFF A. VESICALIS SUPERIOR, A. OBTURATORIA, A. RECTALIS MEDIA, A. VESICALIS INFERIOR, A. PUDENDA INTERNA, A. GLUTEUS INFERIOR)

2. POSTERIOR DIVISION (A. GLUTEUS SUPERIOR, A. SACRALIS LATERALIS, A. ILIOLUMBARIS).

CHAPTER 6 HEAD AND NECK

HEAD AND NECK

ACTIVITY:

IN THIS CHAPTER, STUDENTS LEARN ABOUT THE STRUCTURES OF THE HEAD AND NECK INCLUDING THE BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT THE ANATOMY OF HUMAN'S HEAD AND NECK INCLUDING THE EYE, NOSE, MOUTH AND EAR.

TASK FOR STUDENTS!

1. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE BORDERS AND CONTENTS OF THE AREA IN THE NECK REGION!

2. DRAW A COMPLETE SCHEMATIC TABLE ON THE MUSCLES AND THEIR INNERVATION OF THE FACE AND NECK REGION!

2. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE STRUCTURES RESIDED IN THE REGIO COLLI PROFUNDUS!

6. HEAD AND NECK

HEAD

SUPERFICIAL TO PROFUNDUS OF THE SCALP LAYERS: SCALP (SKIN, CONNECTIVE TISSUE, APONEUROSIS, LOOSE AREOLAR TISSUE, PERICRANIUM).

MUSCLE FOR FACIAL EXPRESSION MUSCLES	**INNERVATION**
OCCIPITOFRONTALIS	CN. VII (N. FACIALIS)
ORBICULARIS OCULI	
CORRUGATOR SUPERCILII	
LEVATOR LABII SUPERIOR ALAQUE NASI	
LEVATOR ANGULI ORIS	
DEPRESOR ANGULI ORIS	
MENTALIS	
RISORIUS	
PLATYSMA	
ZYGOMATICUS MAJOR	
ZYGOMATICUS MINOR	
BUCCINATOR	
DEPRESOR LABII INFERIOR	
PROCERUS	
NASALIS	
ORBICULARIS OCULI	
LEVATOR LABII SUPERIORIS	

VASCULATURE OF THE FACE

ARTERIES	ORIGIN	SUPPLIES/ GIVES RISE TO
FACIAL	A· CAROTIS EXTERNA	FACE
TEMPORALIS SUPERFICIALIS		
OCCIPITALIS		
AURICULARIS POSTERIOR		
LABIAL (SUPERIOR ET INFERIOR)	A· FACIALIS	LIPS AND NOSE
NASALIS LATERAL		
ANGULARIS		
TRANSVERSA FACIEI	A· TEMPORALIS SUPERFICIALIS	FACE AND PAROTID REGION
MENTALIS	A· ALVEOLARIS INFERIOR	CHIN
SUPRAORBITALIS	A· OPHTHALMICA	FOREHEAD AND SCALP
SUPRATROCHLEARIS		
VENOSUS DRAINAGES PARALLELS A·L SUPPLY		

NERVES OF THE FACE

NERVE	BRANCHES	STRUCTURES INNERVATED
SENSORY		
N· OPHTHALMICUS/ VI		

FRONTALIS	SUPRAORBITAL	ANTEROLATERAL SCALP AND FOREHEAD FRONTAL SINUS UPPER EYELID
	SUPRATROCHLEAR	ANTEROMEDIAL SCALP AND FOREHEAD UPPER EYELID
NASOCILIARIS	INFRATROCHLEAR	MEDIAL ASPECT OF BOTH EYELIDS LACRIMAL SACS AND CARUNCLE LATERAL ASPECT OF NOSE
	ETHMOIDALIS ANTERIOR	
ETHMOIDALIS ANTERIOR	NASALIS EXTERNA	MAJORITY OF NOSE
OPHTHALMICUS	LACRIMALIS	CONVEYS PARASYMPATHETICS TO THE LACRIMAL GLAND CONJUNCTIVA AND SKIN OF UPPER EYELID
N. MAXILLARIS/ V2		
INFRAORBITALIS		CHEEK, UPPER LIP, LOWER EYELID MAXILLARY SINUS AND TEETH
ZYGOMATICUS	ZYGOMATICOFACIALIS	CHEEK
	ZYGOMATICOTEMPORALIS	ANTERIOR ASPECT OF TEMPORAL REGION
N. MANDIBULARIS/ V3		
	R. BUCCALIS	CHEEK, SKIN AND MUCOSA BUCCAL GINGIVAE

	AURICULOTEMPORALIS	CONVEYS SECRETOMOTOR FIBRES TO THE PAROTID GLAND FROM THE OTIC GANGLION
ALVEOLARIS INFERIOR	MENTALIS	CHIN MUCOSA OF LOWER LIP
NN. SPINALES CERVICALES		
C1-C2	ANSA CERVICALIS RADIX SUPERIOR	
C2-C3	ANSA CERVICALIS RADIX INFERIOR	
RAMUS ANTERIOR C2-C3	AURICULARIS MAJUS OCCIPITALIS MINUS	ANGULUS MANDIBULAE LOBE OF EAR PAROTID SHEATH
RAMUS POSTERIOR C2	OCCIPITALIS MAJUS	SCALP OF OCCIPITAL REGION
RAMUS POSTERIOR C3	OCCIPITALIS III	SCALP OF OCCIPITAL AND SUBOCCIPITAL REGION
MOTOR		
CN. VII	RR. TEMPORALE, ZYGOMATICUM, BUCCALIS, MANDIBULARE AND CERVICALE	MUSCLES OF FACIAL EXPRESSION
CN. V	CN. V3/ N. MANDIBULARIS	MUSCLES OF MASTICATION

LYMPHATIC OF THE FACE
DRAINS INTO DEEP CERVICAL LYMPH NODES, INTO TRUNCUS LYMPHATICUS JUGULARE.
WALDEYER'S RING COMPOSED OF TONSILA:
1. TUBAE
2. LINGUALIS
3. PALATINA
4. PHARYGEALIS.

REGIO TEMPORALIS

STRUCTURES	DESCRIPTION	SIGNIFICANCE
FOSSA TEMPORALIS	BORDERS: SUPEROPOSTERIOR BY LINEA SUPERIOR ET INFERIOR OS PARIETALE. FLOOR FORMED BY 4 BONES THAT MAKE UP THE PTERION.	FOUR BONES FORMING PTERION: FRONTAL, PARIETAL, ALA MAGNA OS SPHENOID, TEMPORAL. PROXIMAL ATTACHEMNT OF M. TEMPORALIS.
STRUCTURES	**DESCRIPTION**	**SIGNIFICANCE**
FOSSA INFRATEMPORALIS	BORDERS: LATERAL BY MANDIBULA AND ARCUS ZYGOMATICUS MEDIAL BY PLANUM PTERYGOIDEUM LATERALE POSTERIOR TO THE MAXILLA	CONTAINS: 1. PART OF TEMPORALIS 2. MM. PTERYGOIDEUS LATERALIS ET MEDIALIS 3. PLEXUS VENOSUS PTERYGOIDEUS 4. A. MAXIILARIS 5. RAMI CN. V3

VASCULATURE OF REGIO TEMPORALIS

ORIGIN	VESSELS	SUPPLIES/ GIVES RISE TO
ARTERIES		
A. CAROTIS EXTERNA	A. MAXILLARIS	STRUCTURES OF THE TEMPORAL REGION
A. MAXILLARIS	DIVIDED INTO 3 PARTS BY ITS RELATION TO M. PTERYGOIDEUS	

	LATERALIS:	
--1ST PART	AURICULARIS PROFUNDUS	MEATUS AUDITORIUS EXTERNA
	TYMPANICA ANTERIOR	MEMBRANA TYMPANICA
	MENINGEA MEDIA	DURAMATER
	ALVEOLARIS INFERIOR	GIVES RISE TO A· MENTALIS
--2ND PART	TEMPORALIS PROFUNDUS	SUPPLIES TEMPORAL REGION
	RR· MUSCULARES (MASSETERIC, BUCCAL AND PTERYGOIDEA)	FOR THESE MUSCLES
—3RD PART	ALVEOLARIS SUPERIOR POSTERIOR	POSTERIOR MAXILLARY TEETH AND GINGIVAE
	INFRAORBITALIS	GIVES RISE TO A· ALVEOLARIS SUPERIOR ANTERIOR
	PALATINA DESCENDENS	PALATUM AND GINGIVAE
	PHARYNGEALIS	SUPERIOR ASPECT OF PHARYNX
	SPHENOPALATINA	LATERAL NASAL WALL AND SEPTUM
VEINS, GENERALLY PARALLELS TO ITS A··		
PLEXUS VENOSUS PTERYGOIDEUS	VV· MAXILLARIS ET FACIALIS	STRUCTURES IN FOSSA INFRATEMPORALIS

NERVES OF REGIO TEMPORALIS

ORIGIN	NERVE	STRUCTURES INNERVATED
CN· V	CN· V3	SENSORY TO STRUCTURES IN THE TEMPORAL REGION, MOTOR TO THE MASTICATORY MUSCLES AND PARASYMPATHETIC FIBRES TO SALIVATORY GLANDS·
CN· V3/ MANDIBULARIS	BUCCAL	CHEEK—SKIN AND MUCOSA
	AURICULOTEMPORALIS	
	ALVEOLARIS INFERIOR-- NERVE TO M· MYLOHYOID	N· ALVEOLARIS INFERIOR FORMS PLEXUS DENTALIS INFERIOR FOR MANDIBULAR TEETH
	LINGUALIS	CONVEYS SPECIAL SENSE FOR ANTERIOR 2/3 TASTE BUDS OF THE TONGUE AND SECRETOMOTOR FIBRES TO GANGLION SUBMANDIBULARIS ET SUBLINGUALIS·
CN· VII/ FACIALIS	CHORDA TYMPANI	RECEIVES TASTE FIBRES FROM ANTERIOR 2/3 OF TONGUE FROM N· LINGUALIS; CONVEYS PRESYNAPTIC FIBRES FROM CN· VII TO N· LINGUALIS
NUCLEUS SALIVATORIUS INFERIOR	GANGLION OTICUM	POSTSYNAPTIC FIBRES RIDE ON N· AURICULOTEMPORALIS TO INNERVATE GANGLION OTICUM

FOSSA PTERYGOPALATINA

OVERALL	BORDERS: SUPERIOR: ALA MAGNA OS SPHENOID ANTERIOR: MAXILLA INFERIOR: PROCESSUS PYRAMIDALIS OS PALATINA MEDIAL: LAMINA PERPENDICULARE OS PALATINA LATERAL: CONTINUE TO FOSSA INFRATEMPORALIS	OPENINGS: SUPERIOR/ ANTERIOR TO THE ORBIT VIA FISSURA ORBITALIS INFERIOR POSTERIOR/ INFERIOR TO FOSSA CRANII MEDIA VIA FORAMEN ROTUNDUM MEDIAL TO THE NASAL CAVITY VIA FORAMEN SPHENOPALATINA LATERAL TO THE FOSSA INFRATEMPORALIS VIA FISSURA PTERYGOPALATINA.
CONTENTS	N. V2	ENTERS FOSSA VIA FORAMEN ROTUNDUM. GIVES OFF—N. ZYGOMATICUS, CARRIES PARASYMPATHETICS FROM GANGLION SUBMANDIBULARE TO GLANDULA LACRIMALE. GIVES OFF—N. PTERYGOPALATINA, SUPPLIES NASAL AND ORAL CAVITIES. LEAVES VIA FISSURA INFRAORBITALE TO BECOME N. INFRAORBITALE.
	GANGLION PTERYGOPALATINA	IS A PARASYMPATHETIC, PRESYNAPTIC IS FROM NUCLEUS SALIVATORIUS SUPERIOR VIA N. PETROSUS MAJUS, WHICH JOINTS N. PETROSUS PROFUNDUS (SYMPATHETIC) TO FORM A NERVE IN THE CANALIS PTERYGOIDEUS
	A. MAXILLARIS, ENTERS VIA FISSURA PTERYGOMAXILLARIS	I.E. ITS BRANCHES IN THIS FOSSA: 1. ALVEOLARIS SUPERIOR POSTERIOR 2. PALATINA DESCENDENS 3. SPHENOPALATINA 4. INFRAORBITALIS—GIVES RISE TO ALVEOLARIS SUPERIOR ANTERIOR IN CANALIS INFRAORBITALIS.

CAVITAS ORIS

STRUCTURE	DESCRIPTION	SIGNIFICANCE
DENTIS	AT THE PROCESSUS ALVEOLARIS SUPERIOR ET INFERIOR, AND EACH HAS CROWN, ROOT AND NECK COVERED BY ENAMEL. IN ADULT: 32, 6 DENS MOLARIS, 4 DENS PREMOLARIS, 2 DENS CANINUS, 4 DENS INCISIVUS IN EACH DENTAL ARC. IN CHILDREN: 20 DECIDUOUS	INNERVATION: CN. V2 FOR THE MAXILLARY TEETH. CN. V3 FOR THE MANDIBULAR TEETH
GINGIVAE	IS A MUCOSA MEMBRANE COVERED BY FIBROUS TISSUE THAT IS ATTACHED TO THE NECK OF THE TEETH AND TO PROCESSUS ALVEOLARIS.	INNERVATION: N. BUCCALIS ET LINGUALIS (MANDIBULAR PART); N. PALATINA MAJUS, NASOPALATINA AND ALVEOLARIS SUPERIOR ANTERIOR-MIDDLE-POSTERIOR (MAXILLARY PART).
CAVITAS ORIS PROPER	WITHIN ARCUS DENTIS SUPERIOR ET INFERIOR BETWEEN THE MAXILLARY AND PROCESSUS ALVEOLARIS MANDIBULARIS.	CONTAINS GLOSSUS, AND CONTINUOUS POSTERIORLY TO THE OROPHARYNX.
VESTIBULUM ORIS	SPACE BETWEEN TEETH, GINGIVAE AND LABIALS.	FISSURA ORAL: BETWEEN LABIA SUPERIOR ET INFERIOR THAT IS FORMED BY M. LABIALIS ET ORBICULARIS ORIS. LABIA SUPERIOR IS INNERVATED BY CN. V2, LABIA INFERIOR BY CN. V3. PHILTRUM: A VERTICAL GROOVE AT THE LABIA SUPERIOR. CHEEKS: IS FORMED BY M. BUCCINATOR THAT KEEP FOOD AWAY FROM INSIDE VESTIBULUM ORIS.

GLOSSUS	DIVIDE INTO DEXTRA AND SINISTRA BY SULCUS MEDIANUS· HAS: 1/3 RADIX POSTERIOR 2/3 BODY ANTERIOR APEX DORSUM, RESIDES BY PAPILLAE LINGUALIS (VALLATUM, FOLLIATUM, FILIFORMIS, FUNGIFORMIS) FRENULUM LINGUAE- AT THE INFERIOR SURFACE THAT CONNECTS TONGUE TO THE FLOOR OF THE MOUTH· FORAMEN CAECUM: REMNANTS OF DUCTUS THYROGLOSSUS· INTRINSIC MUSCLES: SUPERIOR ET INFERIOR LONGITUDINAL, TRANSVERSE, VERTICAL (CN· XII) EXTRINSIC MUSCLES: 1· GENIOGLOSSUS (CN· XII) 2· HYOGLOSSUS (CN· XII) 3· STYLOGLOSSUS (CN· XII) 4· PALATOGLOSSUS (PLEXUS PHARYNGICUS)	INNERVATION: MOTOR BY CN· XII, EXCEPT M· PALATOGLOSSUS (BY PLEXUS PHARYNGEUS) 1/3 POSTERIOR: GENERAL AND SPECIAL SENSORY BY CN· IX 2/3 ANTERIOR: GENERAL SENSORY BY N· LINGUALIS (CN· VII), TASTE BUDS OF SPECIAL SENSORY BY N· CHORDA TYMPHANI (CN· VII) BLOOD SUPPLY: A· LINGUALIS BRANCHED OF A· FACIALIS VEINS PARALLEL TO THE ARTERIES· VV· LINGUALES PROFUNDA: INFERIOR SURFACE OF THE TONGUE, CAN BE AN ACCESS FOR RAPID DRUGS ENTRY I·E· NITROGLYVERIN FOR TREATMENT OF ANGINA PECTORIS·
PALATUM	MUSCLES (ALL ARE INNERVATED BY PLEXUS PHARYNGICUS, EXCEPT TENSOR PALATI BY CN· V3): 1· TENSOR PALATI 2· LEVATOR PALATI 3· PALATOGLOSUS (ANTERIOR ARC) 4·PALATOPHARYNGEUS (POSTERIOR ARC) 5· MUSCUUS UVULAE	

ARTICULATIO TEMPOROMANDIBULARIS	IS A SYNOVIAL JOINT FORMED BY HEAD OF MANDIBLE WITH FOSSA MANDIBULARIS AND TUBERCULUS ARTICULARIS OS TEMPORALIS.	SUPPORTED BY LIG. STYLOMANDIBULARIS ET SPHENOMANDIBULARIS.
MASTICATION & SALIVARY GLANDS	3 PAIRS OF SALIVARY GLANDS: 1. PAROTIDEA 2. SUBMANDIBULARIS 3. SUBLINGUALIS MUSCLES OF MASTICATION, ALL ARE INNERVATED BY CN. V3: 1. TEMPORALIS 2. MASSETER 3. PTERYGOIDEUS MEDIAL 4. PTERYGOIDEUS LATERAL	I.E.: 1. DUCTUS PAROTIDEUS 2. DUCTUS SUBMANDIBULARIS 3. DUCTUS SUBLINGUALIS
NOSE		
EXTERNAL NOSE	COMPOSED OF DORSUM AND APEX. NARES/ NOSTRILS: LEAD INTO NASAL CAVITY WITH LATERAL WALL COMPOSED BY ALAE (WINGS) OF THE NOSE AND MEDIAL WALL BY NASAL SEPTUM HAS BONY AND CARTILAGENOUS PARTS.	BONY: 1. NASAL BONES 2. FRONTAL PROCESSES OF THE MAXILLAE 3. NASAL PART OF THE FRONTAL BONE AND ITS NASAL SPINE 4. BONY PART OF THE NASAL SEPTUM CARTILAGENOUS: 1. 2 LATERAL CARTILAGE 2. 2 ALAR CARTILAGE 3. 1 SEPTAL CARTILAGE
NASAL CAVITIES	SUPERIOR PARTS IS CURVED AND NARROW, EXCEPT AT THE POSTERIOR END INFERIOR PARTS IS HARD PALATE	CONCHAE NASALIS: 1. SUPERIOR NASAL CONCHAE 2. MIDDLE NASAL CONCHAE 3. INFERIOR NASAL CONCHAE SUPERIOR TO SUPERIOR CONCHA

	A·L SUPPLY BY BRANCHES OF THE A· SPHENOPALATINE, A· ETHMOIDALIS ANTERIOR, A· ETHMOIDALIS POSTERIOR, A· PALATINA MAJOR, A· LABIALIS SUPERIOR, AND THE LATERAL NASAL BRANCHES OF THE A· FACIALIS· VEIN DRAINS TO THE SPHENOPALATINE, FACIAL, AND OPHTHALMIC VEINS· INNERVATION : **1·** POSTERO-INFERIOR HALF TO TWO THIRDS OF THE NASAL MUCOSA IS CHIEFLY FROM CN V_2 - N· NASOPALATINUS : NASAL SEPTUM - POSTERIOR LATERAL NASAL BRANCHES OF THE GREATER PALATINE NERVE : LATERAL WALL **2·** THE ANTEROSUPERIOR PART OF THE NASAL MUCOSA IS SUPPLIED BY THE ANTERIOR ETHMOIDAL NERVES, BRANCHES OF CN V_1 KISSELBACH'S AREA: IS AN AREA RICH IN CAPILLARIES WHERE ALL ARTERIES SUPPLYING THE SEPTUM ANASTOMOSE· IT LIES ON THE ANTERIOR PART OF THE NASAL SEPTUM·	IS THE RECESSUS SPHENOETHMOIDALIS CHOANAE IS WHERE THE NASAL CAVITIES CONTINUES WITH THE NASOPHARYNX POSTERIORLY·
SINUS PARANASALIS	EXTENSION OF THE NASAL CAVITIES INTO THE SURROUNDING BONES: 1· FRONTAL 2· ETHMOID 3· SPHENOID 4· MAXILLAE EXTENSION OF THE NASAL CAVITIES INTO THE SURROUNDING BONES: 1· FRONTAL 2· ETHMOID	**1·** INSULATING SENSITIVE STRUCTURES LIKE DENTAL ROOTS AND EYES FROM RAPID TEMPERATURE FLUCTUATIONS IN THE NASAL CAVITY **2·** HUMIDIFYING AND HEATING OF INHALED AIR BECAUSE OF SLOW AIR TURNOVER IN THIS REGION **3·** REGULATING OF INTRANASAL

	3. SPHENOID 4. MAXILLAE	AND SERUM GAS PRESSURE IMMUNOLOGICAL DEFENSE FUNCTION: **4.** DECREASING THE RELATIVE WEIGHT OF THE FRONT OF THE SKULL, AND ESPECIALLY THE BONES OF THE FACE **5.** INCREASING RESONANCE OF THE VOICE **6.** PROVIDING A BUFFER AGAINST FACIAL TRAUMA **7.** INSULATING SENSITIVE STRUCTURES LIKE DENTAL ROOTS AND EYES FROM RAPID TEMPERATURE FLUCTUATIONS IN THE NASAL CAVITY **8.** HUMIDIFYING AND HEATING OF INHALED AIR BECAUSE OF SLOW AIR TURNOVER IN THIS REGION **9.** REGULATING OF INTRANASAL AND SERUM GAS PRESSURE **10.** IMMUNOLOGICAL DEFENSE

AURIS

STRUCTURE	**DESCRIPTION**	**SIGNIFICANCE**
EXTERNAL	1. AURICLE 2. MEATUS AUDITORIUS EXTERNA, ENDS AT MEMBRANA TYMPANICUM, FILLED WITH HAIR AND CERUMEN	BLOOD SUPPLY: THE POSTERIOR AURICULAR AND SUPERFICIAL TEMPORAL ARTERIES. INNERVATION: THE MAIN NERVES TO THE SKIN OF THE AURICLE ARE THE GREAT AURICULAR AND AURICOTEMPORAL NERVES, WITH MINOR CONTRIBUTIONS FROM THE FACIAL (CN VII) AND VAGUS (CN X) NERVES.

MIDDLE	1· CONNECTED TO NASOPHARYNX BY PHARYNGOTYMPANIC TUBE AND MASTOID AIR CELLS THROUGH ADITUS· 2· CONTAINS 3 BONES: • MALLEUS • INCUS • STAPES STAPEDIUS AND TENSOR TYMPANI CONNECT TO THE HANDLE OF MALLEUS AND THE NECK OF STAPES RESPECTIVELY· 3· CHORDA TYMPANI	BLOOD SUPPLY: NUMEROUS ARTERIES SUPPLY THE STRUCTURES IN THE MIDDLE EAR: • THE TWO LARGEST BRANCHES ARE THE TYMPANIC BRANCH OF THE MAXILLARY A· AND THE MASTOID BRANCH OF THE OCCIPITAL OR POSTERIOR AURICULAR ARTERIES· • SMALLER BRANCHES COME FROM THE MIDDLE MENINGEAL A·, THE ASCENDING PHARYNGEAL A·, THE A· OF THE PTERYGOID CANAL, AND TYMPANIC BRANCHES FROM THE A· CAROTIS INTERNA INNERVATION: THE NERVES OF THE PHARYNGOTYMPANIC TUBE ARISE FROM THE PLEXUS TYMPANICUS WHICH IS FORMED BY FIBERS OF CN IX· THE ANTERIOR PART OF THE TUBE ALSO RECEIVES NERVE FIBERS FROM THE PTERYGOPALATINE GANGLION
INTERNAL	BONY COMPONENT: 1· VESTIBULE 2· THREE SEMICIRCULAR CANALS 3· COCHLEA MEMBRANOUS COMPONENT: 1· SACCUS ENDOLYMPHATICUS 2· UTRICULUS AND SACULUS, CONTAINS MACULA-RECEPTOR ORGANS TO CHANGES IN HEAD POSITION· 3· DUCTUS SEMICIRCULARIS, 3 ON EACH SIDE, CONTAIN ENDOLYMPH 4· DUCTUS COCHLEARIS USING	BLOOD SUPPLY: • THE BONY LABYRINTH IS SUPPLIED BY THE SAME ARTERIES THAT SUPPLY THE SURROUNDING TEMPORAL BONE- THESE INCLUDE AN ANTERIOR TYMPANIC BRANCH FROM A· MAXILLARIS, A· STYLOMASTOIDEA BRANCH FROM THE A· AURICULARIS POSTERIOR, AND A PETROSAL BRANCH FROM THE A· MENINGICA MEDIA· • THE MEMBRANOUS LABYRINTH IS SUPPLIED BY THE LABYRINTH A· THAT DIVIDES INTO A COCHLEAR BRANCH AND ONE OR TWO VESTIBULAR BRANCH INNERVATION: VESTIBULOCOCHLEAR NERVE

	SPIRAL-RECEPTOR ORGAN OF MEMBRANOUS LABYRINTH FOR HEARING.	

OCULUS		
STRUCTURE	**DESCRIPTION**	
ORBITA	BONY WALLS: **1.** SUPERIOR: THE FRONTAL BONE **2.** INFERIOR: THE ZYGOMATIC PROCESS OF THE MAXILLA AND THE ZYGOMATIC BONE **3.** MEDIAL: THE FRONTAL PROCESS OF THE MAXILLA **4.** LATERAL: THE ZYGOMATIC BONE, THE FRONTAL PROCESS OF THE ZYGOMATIC BONE, AND THE ZYGOMATIC PROCESS OF THE FRONTAL BONE	
PALPEBRAE	3 LAYERS: 1. OUTER 2. INNER 3. MIDDLE OTHER STRUCTURES: 1. LIG. PALPEBRAE MEDIAL ET LATERAL 2. EYELASHES & GLANDULA CILLIARIS 3. PUNCTUM LACRIMALE 3. SEPTUM ORBITALE.	
EYE	3 LAYERS OF THE EYEBALL: 1. OUTER : SCLERA AND CORNEA 2. MIDDLE : CHOROID AND IRIS 3. INNER : RETINA THREE SPACES IN THE EYEBALL: 1. CAMERA OCULI ANTERIOR 2. CAMERA OCULI POSTERIOR 3. VITREOUS CHAMBER LENS-A TRANSPARENT, BICONVEX ELASTIC DISC ATTACHED CIRCUMFERENTIALLY TO MUSCLES ASSOCIATED WITH THE OUTER WALL OF THE EYEBALL.	

LACRIMAL APPARATUS	1· GLANDULA LACRIMALIS LOCATED IN THE ANTERIOR AND SUPEROLATERAL OF THE EYE BALL, SEPARATED BY M· LEVATOR PALPEBRA SUPERIOR INTO: **a·** PARS ORBITALIS **b·** PARS PALPEBRALIS 2· DUCTUS LACRIMALIS SERVE AS DUCT FOR SECRETION FROM GLANDULA LACRIMALIS TO THE LATERAL OF FORNIX CONJUNCTIVA SUPERIOR 3· CANALICULI LACRIMALIS CONVEYS TEARS INTO SACCUS LACRIMALIS VIA CAPILLARY ACTION·	
CONJUNCTIVUM	DESCRIPTION CONJUNCTIVA IS A THIN MEMBRANE THAT COVERS THE MUCOSA OF SUPERIOR PALPEBRA, INFERIOR PALPEBRA, AND FORNIX· IT ALSO COVER SCLERA ANTERIOR· IT'S SEPARATED TO THREE PARTS CALLED CONJUNCTIVA PALPEBRA, CONJUNCTIVA FORNIX, AND CONJUNCTIVA BULBI· INNERVATION SENSORY: ALL BRANCHES OF N· TRIGEMINUS·	
STRUCTURE	**DESCRIPTION**	**SIGNIFICANCE**
EXTRAOCULAR MUSCLES	**1·** M· LEVATOR PALPEBRAL SUPERIOR	N· OCULOMOTORIUS (N·III)
	2· M· RECTUS SUPERIOR	N· OCULOMOTORIUS (N·III)
	3· M· RECTUS INFERIOR	N· OCULOMOTORIUS (N·III)
	4· M· RECTUS MEDIAL	N· OCULOMOTORIUS (N·III)
	5· M· RECTUS LATERAL	N· ABDUCENS (N·VI)
	6· M· OBLIQUUS SUPERIOR	N· TROCHLEARIS (N·IV)
	7· M· OBLIQUUS INFERIOR	N· OCULOMOTORIUS (N·III)

VASCULATURE OF THE ORBIT		
ARTERY	**ORIGIN**	**SUPPLIES/ GIVES RISE TO**
OPHTHALMIC	A. CAROTIS INTERNA	ALL THE STRUCTURES IN THE ORBIT AS WELL AS SOME STRUCTURES IN THE NOSE, FACE AND MENINGES.
RETINA CENTRALIS	A. OPHTHALMICA	THE INNER RETINAL LAYERS.
SUPRAORBITAL	A. OPHTHALMICA	MUSCLES AND SKIN OF THE FOREHEAD.
SUPRATROCHLEAR	A. OPHTHALMICA	SUPPLIES THE INTEGUMENT, MUSCLES, AND PERICRANIUM.
DORSAL NASAL	A. OPHTHALMICA	OUTER SURFACE OF DORSUM OF THE NOSE.
LACRIMAL	A. OPHTHALMICA	THE LACRIMAL GLAND.
ETHMOIDAL (ANTERIOR ET POSTERIOR)	A. OPHTHALMICA	POSTERIOR: THE POSTERIOR ETHMOIDAL SINUSES AND ENTERS THE SKULL TO SUPPLY THE MENINGES. ANTERIOR: THE ANTERIOR AND MIDDLE ETHMOIDAL SINUSES AS WELL AS THE FRONTAL SINUS AND ALSO ENTERS THE CRANIUM TO SUPPLY THE MENINGES.
POSTERIOR CILLIARY (SHORT AND LONG)	A. OPHTHALMICA	LONG: THE IRIS, CORPUS CILIARE AND CHOROID SHORT: THE CHOROID (UP TO THE EQUATOR OF THE EYE) AND PROCESSUS CILIARIS.
ANTERIOR CILLIARY	A. OPHTHALMICA	THE CONJUNCTIVA, THE SCLERA AND THE RECTUS MUSCLES.
VEIN	**TERMINATION**	**DRAINS**
SINUS VENOSUS SCLERA	VORTICOSE	AQUEOUS HUMOUR

VORTICOSE	OPHTHALMIC	OCULAR CHOROID
RETINA CENTRALIS	SINUS CAVERNOSUS/ OPHTHALMIC INFERIOR	THE CAPILLARIES OF THE RETINA
OPHTHALMIC SUPERIOR	PLEXUS VENOSUS PTERYGOID, SINUS CAVERNOSUS/ OPHTHALMIC INFERIOR	TTHE SUPERIOR OPHTHALMIC VEIN
OPHTHALMIC INFERIOR		VORTICOSE VEIN
NERVE AT THE ORBIT		
NERVE	**ORIGIN**	**STRUCTURE INNERVATED**
FRONTAL	OPHTHALMIC	THE SKIN OF THE FOREHEAD, MUCOSA OF SINUS FRONTALIS, AND THE SKIN OF THE UPPER EYELID·
NASOCILLIARY		THE MUCOUS MEMBRANE OF THE NOSE, THE SKIN OF THE TIP OF THE NOSE, AND THE CONJUNCTIVA
LACRIMAL		THE GLANDULA LACRIMALIS, CONJUNCTIVA, AND THE LATERAL UPPER EYELIDS
ETHMOIDAL (ANTERIOR ET POSTERIOR)	NASOCILLIARY	ANTERIOR: THE CAVUM NASI POSTERIOR: THE SINUS SPHENOIDALIS AND POSTERIOR ETHMOIDAL AIR CELLS
LONG CILLIARY		THE EYEBALL, INCLUDING THE CORNEA
SHORT CILLIARY	GANGLION CILIARE	PARASIMPATIS: THE CORPUS CILIARIS AND IRIS
GANGLION CILIARE	INNERVATED BY ACCESSORY CN III NUCLEUS	TWO EYE MUSCLES: THE SPHINCTER PUPILLAE, AND THE CILIARIS CONTRACTS

GANGLIA PARASYMPATHICUM IN THE HEAD REGION

GANGLIA	AFFERENT	EFFERENT
CILIARE	SENSORY FIBRES OF THE EYE VIA N. NASOCILLIARIS BRANCHED FROM N. OPHTHALMICUS. THI S SENSORY FIBRE RUNS ALONG N. CILLIARIS LONGUS ET BREVIS VIA THE GANGLION WITHOUT SYNAPSED.	PREGANGLIONER PARASYMPATHETIC FIBRE OF NUCLEUS EDINGER WESTHPAL IN N. OCULOMOTORIUS THAT SYNAPS IN GANGLION CILLIARE. POSTGANGLIONER SYMPATHETIC FIBRE OF PLEXUS CAROTICUS INTERNUS VIA RADIX SYMPHATICUS GANGLION CILLIARE.
OTICUM	SENSORY FIBRE OF N. AURICULO TEMPORALIS.	PREGANGLIONER PARASYMPATHETIC FIBRE OF N. GLOSSOPHARYNGEUS BRANCHES AND SYNAPS WITH GANGLION OTICUM. THE POSTGANGLIONER FIBRE JOINS N. AURICULOTEMPORALIS AND RUND TO THE GLANDULA PAROTIS. POSTGANGLIONER SYMPATHETIC FIBRE OF GANGLION CERVICALIS SUPERIOR ONLY PASSED THE GANGLION OTICUM.
PTERYGOPA LATINUM	SENSORY FIBRE OF N. MAXILLARIS	MOTOR FIBRE OF N. MAXILLARIS. PARASYMPATHETIC FIBRE CARRIES BY N. PETROSUS SUPERFICIALIS MAJOR (FROM N. FACIALIS), SYNAPSED IN GANGLION PTERYGOPALATINUM, THE POSTGANGLIONER FIBRE FOLLOWS N. ZYGOMATICUS AND JOINS N. LACRIMALIS. POSTGANGLIONER SYMPATHETIC FIBRES FROM PLEXUS CAROTICUS AS N. PETROSUS PROFUNDUS TOGETHER WITH N. PETROSUS SUPERFICIALIS MAJOR FORMED N. PTERYGOIDEUS (NOT SYNAPSED IN THIS GANGLION).

SUBMANDIBULARE		PREGANGLIONER PARASYMPATHETIC FIBRE FROM NUCLEUS SALIVATORIUS SUPERIOR OF PONS VIA CHORDA TYMPANI AND N. LINGUALIS SYNAPSED IN THIS GANGLION. POSTGANGLIONER PARASYMPATHETIC FIBRES RUN TO GLANDULA SUBMANDIBULARIS AND SUBLINGUALIS. SYMPATHETIC FIBRE OF PLEXUS CAROTICUS EXTERNUS RUNS ALONG A. FACIALIS AND ITS BRANCHES, AND NOT SYNAPSED IN THIS GANGLION.

REGIO COLLI

VERTEBRA CERVICALIS

GENERALLY HAS: PROCESSUS ARTICULARIS SUPERIOR, PROCESSUS ARTICULARIS INFERIOR, CORPUS VERTEBRAE, INCISURA VERTEBRALIS SUPERIOR, INCISURA VERTEBRALIS INFERIOR, FORAMEN INTERVERTEBRALE, FACIES ARTICULARIS SUPERIOR, FACIES ARTICULARIS INFERIOR, PROCESSUS SPINOSUS, PROCESSUS TRANSVERSUS, ARCUS VERTEBRAE.

VERTEBRA C I: ARCUS ANTERIOR ATLANTIS, ARCUS POSTERIOR ATLANTIS, TUBERCULUM ANTERIUS, TUBERCULUM POSTERIUS, FOVEA DENTIS, FORAMEN TRANSVERSARIUM, MASSA LATERALIS, SULCUS A. VERTEBRALIS.
VERTEBRA C II: DENS AXIS, FACIES ARTICULARIS ANTERIOR DENTIS (JOINT WITH ARCUS ANTERIOR ATLANTIS), FACIES ARTICULARIS POSTERIOR DENTIS (JOINT BY LIGAMENTUM TRANSVERSUM ATLANTIS).

FASCIA AND SPATIUM

STRUCTURE	**DESCRIPTION**
FASCIA CERVICALIS SUPERFICIALIS	SUBCUTANEUS
FASCIA CERVICALIS PROFUNDUS	
- LAMINA SUPERFICIALIS	ENVELOPES MUSCULUS TRAPEZIUS, MUSCULUS OMOHYOIDEUS, MUSCULUS STERNOCLEIDOMASTOIDEUS, AND MUSCULI INFRAHYOIDEI. ALSO ENVELOPES GLANDULA PAROTIS AND GLANDULA SUBMANDIBULARIS.

- LAMINA PRETRACHEALIS	ENVELOPES GLANDULA THYROIDEA, MUSCULI IMFRAHYOIDEI, TRACHEA, LARYNX, PHARYNX, OESOPHAGUS.
- LAMINA PREVERTEBRALIS	ATTACHED TO BASIS CRANII AND PROFUNDUS TO MUSCULUS TRAPEZIUS. ENVELOPES MUSCULI PREVERTEBRALES AND MUSCULI SCALENI.
CAROTID SHEATH	FASCIA PROFUNDUS THAT ENVELOPES V. JUGULARIS INTERNA, A. CAROTIS COMMUNIS, N. VAGUS, PLEXUS PERIATERIAL CAROTIS, N. SINUS CAROTIS.
FASCIA BUCCOPHARYNGEA	CONTINUATION OF LAMINA PRETRACHEALIS BEHIND THE OESOPHAGUS AND ENVELOPES MUSCULI CONSTRICTOR PHARYNGES AND MUSCULUS BUCCINATORS.
SPATIUM IN THE NECK REGION	
SPATIUM RETROPHARYNGEA	BETWEEN LAMINA PREVERTEBRALIS AND FASCIA BUCCOPHARINGEA THAT WINDS ROUND THE PHARYNX

MUSCULUS	**INNERVATION**
MUSCULUS STERNOCLEIDOMASTOIDEUS	N. ACCESORIUS (N. CRANIALIS XI)
MUSCULI SUPRAHYOIDEA	
MUSCULUS	**INNERVATION**
- MUSCULUS MYLOHYOIDEUS	N. MANDIBULARIS RAMUS MUSCULARIS
- MUSCULUS DIGASTRICUS: VENTER ANTERIOR VENTER POSTERIOR	 N. CRANIALIS V3 N. CRANIALIS VII

- MUSCULUS GENIOHYOID	C1 VIA N. CRANIALIS XII
- MUSCULUS STYLOHYOIDEUS	N. CRANIALIS VII
MUSCULI INFRAHYOIDEA	
- MUSCULUS OMOHYOIDEUS VENTER SUPERIOR VENTER INFERIOR	ANSA CERVICALIS
- MUSCULUS STERNOTHYROIDEUS	
- MUSCULUS STERNOHYOIDEUS	
- MUSCULUS THYROHYOIDEUS	N. HYPOGLOSSUS
MUSCULI PREVERTEBRALE	
- MUSCULUS LONGUS COLLI	RAMI ANTERIOR C2-C6
- MUSCULUS LONGUS CAPITIS	RAMI ANTERIOR C1-C3
- MUSCULUS RECTUS CAPITIS ANTERIOR ET LATERAL	RAMI ANTERIOR C1-C2
- MUSCULUS SCALENUS ANTERIOR	RAMI ANTERIOR NN. SPINALES CERVICALES
- MUSCULUS SCALENUS MEDIA	
- MUSCULUS SCALENUS POSTERIOR	

REGION	**AREA AND CONTENT**
REGIO CERVICALIS ANTERIOR	- TRIGONUM SUBMANDIBULARE: GLANDULA SUBMANDIBULARIS, LNN. SUBMANDIBULARES, N. HYPOGLOSSUS, N. MYLOHYOID, PARTS OF FACIAL VEIN AND ARTERY - TRIGONUM SUBMENTALE: LNN. SUBMENTALES, SUPERFICIAL VEINS DRAINED INTO V. JUGULARIS ANTERIOR - TRIGONUM CAROTICUM: VAGINA CAROTICA WITH A. CAROTIS COMMUNIS AND ITS TRIBUTARIES, A. CAROTIS EXTERNA AND ITS

	TRIBUTARIES, N· VAGUS, V· JUGULARIS INTERNA, N· HYPOGLOSSUS, RADIX SUPERIOR OF ANSA CERVICALIS, N· ACCESORIUS, GLANDULA THYROID, LARYNX, PHARYNX, LNN· CERVICALES PROFUNDUS, BRANCHES OF PLEXUS CERVICALIS· - TRIGONUM MUSCULARE: MUSCULUS STERNOHYOIDEUS, MUSCULUS STERNOTHYROIDEUS, PLANDULA THYROID, AND GLANDULA PARATHYROID·
REGIO CERVICALIS LATERALIS	- TRIGONUM OCCIPITALIS: PART OF V· JUGULARIS EXTERNA, RAMI POSTERIOR PLEXUS CERVICALIS, N· ACCESSORIES, TRUNCUS PLEXUS BRACHIALIS, TRUNCUS CERVICODORSALIS, LNN· CERVICALES - TRIGONUM SUBCLAVIA: A· SUBCLAVIA, PART OF V· SUBCLAVIA, A· SUPRASCAPULARIS, LNN· SUPRASCAPULARES
REGIO CERVICALIS POSTERIOR	MUSCULUS TRAPEZIUS, RAMI POSTERIOR PLEXUS CERVICALIS, REGIO SUBOCCIPITALIS

RADIX COLLI

STRUCTURE	**DESCRIPTION**
CN X	N· VAGUS: - N· RECURRENS DEXTRA: FROM N· VAGUS - N· RECURRENS SINISTRA: FROM N· VAGUS WINDS UP THE ARCUS AORTA BEHIND LIGAMENTUM ARTERIOSUM·
	N· PHRENICUS: FOR THE DIAPHRAGMA AND SEROUS MEMBRANE OF THE THORAX ANDABDOMEN (PLEURA AND PERITONEUM)
	TRUNCUS SYMPATHICUS: FROM MEDULLA SPINALIS T1-T2, SOMETIMES C8 ALSO· GANGLION CERVICALE SUPERIUS, GANGLION CERVICALE MEDIUS, GANGLION VERTEBRALE, GANGLION CERVICOTHORACICUM·
ARTERY	TRUNCUS BRACHIOCEPHALICA, BRANCHES OUT AS A· SUBCLAVIA DEXTRA AND A· CAROTIS COMMUNIS·
	A· SUBCLAVIA (DEXTRA ET SINISTRA): BRANCHES ARE VIEWED BY THEIR COURSE FROM THE SITE OF MUSCULUS SCALENUS ANTERIOR, FIRST PART IS A· VERTEBRALIS, A· THORACICA INTERNA, AND TRUNCUS THYROCERVICALIS, SECOND PART IS A· COSTOCERVICALIS, THIRD PART IS A· SCAPULARIS DORSALIS·

VEIN	V. JUGULARIS EXTERNA: THE FLOWS ARE FROM V. RETROMANDIBULARIS AND V. AURICULARIS POSTERIOR OR V. MAXILLARIS. STARTS NEAR GLANDULA PAROTIS AND DRAINED INTO V. SUBCLAVIA OR V. JUGULARIS INTERNA.
	V. JUGULARIS ANTERIOR: STARTS FROM REGIO SUPRAHYOIDEUM, OR V. FASCIALIS OR V. RETROMANDIBULARIS. DRAINED INTO V. JUGULARIS EXTERNA OR V. SUBCLAVIA.
	V. SUBCLAVIA: DRAINED INTO V. BRACHIOCEPHALICA

LYMPHATICS

STRUCTURE	**DESCRIPTION**
THYROID	TRAVEL SUPERIORLY ALONG A. THYROIDEA SUPERIOR TO LNN. CERVICALES PROFUNDUS. TRAVEL INFERIORLY ALONG A. THYROIDEA INFERIOR TO LNN. PARATHRACHEALES. FROM THE ISTHMUS INTO LNN. PRELARYNGEALES AND LNN. PRETRACHEALES.
PARA THYROID	DRAINED INTO LNN. CERVICALES PROFUNDUS AND LNN. PARATRACHEALES
LARYNX	ABOVE PLICA VOCALIS TRAVELS ALONG A. LARYNGEUS SUPERIOR VIA MEMBRANA THYROHYOIDEA AND TO LNN. CERVICALES PROFUNDUS SUPERIOR. BELOW PLICA VOCALIS INTO LNN. PARATHRACHEALES AND PRETRACHEALES, AND INTO LNN. CERVICALES PROFUNDUS INFERIOR.
PHARYNX	DRAINED INTO LNN. CERVICALES PROFUNDUS.

ENDOCRINE

GLANDULA	**DESCRIPTION**
THYROID	TWO LOBES, SOMETIMES WITH AN ISTHMUS IN BETWEEN AND LOBUS PYRAMIDALIS.
PARATHYROID	SMALL GLAND IN THE POSTERIOR SIDE OF GLANDULA THYROIDEA.
OTHER STRUCTURES	

A. THYROIDEA IMA	NOT ALWAYS PRESENT.

LARYNX

STRUCTURE	**DESCRIPTION**
ADITUS LARYNGIS	THE ENTRANCE.
VESTIBULUM LARYNX	FROM ADITUS LARYNGIS UNTILL PLICA VESTIBULARIS.
VENTRICULUS LARYNX	RESIDED IN BETWEEN PLICA VESTIBULARIS AND PLICA VOCALIS.
CAVITAS INFRAGLOTICA	THE MOST INFERIOR PART OF CAVITAS LARYNGIS, FROM RIMA GLOTTIDUS UNTILL TRACHEA.
PLICA VESTIBULARIS	HORIZONTAL FOLD BETWEEN VESTIBULUM LARYNGIS AND VENTRICULUS LARYNGIS.
PLICA VOCALIS	THE ORIGINAL SOUNDMAKER, MOBILE, IS A MUSCULOMEMBRANOUS BAND IN THE INFEROMEDIAL OF PLICA VESTIBULARIS.
GLOTIS	BOTH OF PLICAE VOCALES WITH THEIR PROCESSUS VOCALIS TOGETHER WITH RIMA GLOTTIDIS.
BLOOD SUPPLY	A. LARYNGEA SUPERIOR AND A. LARYNGEA INFERIOR, BRANCHES OF A. THYROIDEA SUPERIOR AND A. THYROIDEA INFERIOR, RESPECTIVELY.
VALSAVA MANEUVER	FORCED EXPIRATION WITH CLOSED MOUTH AND NOSE, WILL FORCE THE AIR INTO THE EARS WHILST TUBA EUSTACHII OPENS. CAN BE DONE TO TEST THE HEART FUNCTION AND THE AUTONOMIC NERVE SYSTEM; OR TO BALANCE THE INNER EAR PRESSURE WHENEVER DIFFERENT AIR PRESSURE IS DETECTED I.E. DIVING AND TAKE-OFF.

CARTILAGINES LARYNGES

STRUCTURE	MEMBRANA THYROHYOID
CARTILAGO THYROIDEA	LIGAMENTUM VOCALE
CARTILAGO CRICOIDEA	MEMBRANA QUADRANGULARE
EPIGLOTIS	CONUS ELASTICUS

2 CARTILAGO ARYTENOIDEA 2 CARTILAGO CORNICULATA 2 CARTILAGO CUNEIFORME	ARTICULATIO CRICOTHYROIDEUS ARTICULATIO CRICOARYTENOIDEUS

MUSCULI OF THE LARYNX
EXTERNAL MUSCLE GROUP COMPRISED OF THE SUPRA- AND INFRA-HYOIDEA MUSCLES.

INTRINSIC MUSCLES OF LARYNX	**ORIGIN**	**INSERTION**	**INNERVATION**	**MAIN FUNCTION**
M. VOCALIS	PROCESSUS VOCALIS CARTILAGO ARYTENOIDEA	LIGAMENTUM VOCALE	N. LARYNGEUS RECURRENT	STRETCHED LIGAMENTUM VOCALE ANTERIOR.
M. CRICOTHYROIDEUS	ANTERIOR CARTILAGO CRICOIDEA	INFERIOR BORDER OF CARTILAGO THYROIDEA AND CORNU INFERIOR CARTILAGO THYROIDEA	RAMUS EXTERNUS NN. LARYNGEI SUPERIORIS	RELAXES AND TENSES PLICA VOCALIS
M. THYROARYTENOIDEUS	ASPECTUS POSTERIOR OF CARTILAGO THYROIDEA	PROCESSUS MUSCULARIS CARTILAGO ARYTENOIDEA	N. LARYNGEUS RECURRENS	SHORTENS AND RELAXES PLICA VOCALIS, SFINGTER VESTIBULUM
M. CRICOARYTENOIDEUS POSTERIOR	PERMUKAAN POSTERIOR LAMINA CARTILAGINES CRICOIDEA	PROCESSUS MUSCULARIS CARTILAGINES ARYTENOIDEA		ABDUCTION OF PLICA VOCALIS

M. CRICOARYTENOIDEUS LATERALIS	ARCUS CARTILAGO CRICOIDEA	PROCESSUS MUSCULARIS CARTILAGO ARYTENOIDEA		ADDUCTION OF PLICA VOCALIS
MM. ARYTENOIDEA TRANSVERSUS ET OBLIQUUS	CARTILAGO ARYTENOIDEA	CARTILAGO ARYTENOIDEA OF THE OTHER HALF		CLOSES INTERCARTILAGINOSA RIMA GLOTTIDIS

STRUCTURE

A. CAROTIS COMMUNIS, DIVIDED INTO A. CAROTIS INTERNA AND A. CAROTIS EXTERNA AT THE LEVEL OF THYROID CARTILAGE (CIV-CV). A. CAROTIS EXTERNA BRANCHES ARE A. THYROIDEA SUPERIOR, A. LINGUALIS, A. FACIALIS, A. OCCIPITALIS, A. AURICULARIS POSTERIOR, A. PHARYNGEA SCENDENS, A. TEMPORALIS SUPERFICIALIS, A. MAXILLARIS.

OESOPHAGUS
PHARYNX
BLOOD SUPPLY: A. TONSILLARES, A. PALATINA ASCENDENS ET DESCENDENS, A. LINGUALIS, A. PHARYNGEA ASCENDES. THE VEINS USUALLY PARALLELWITH THE ARTERY.

FOSSA PIRIFORMIS: THE SHALLOW PART OF CAVITAS LARYNGOPHARYNGEALIS RESIDED AT THE SIDE OF ADITUS LARYNGIS. LIES BETWEEN MEMBRANA THYROIDEA AND CARTILAGO THYROIDEA IN LATERAL, PLICA ARYEPIGLOTTICA AND CARTILAGO ARYTENOIDEA DAN CRICOIDEA IN THE MEDIAL. SUPERIORLY BOUNDED BY OS HYOIDEUM AND CARTILAGO CRICOIDEA IN THE INFERIOR SIDE.

FACIES PHARYNX: MUCOSA, TUNICA FIBROSA (FASCIA PHARYNGOBASILARIS), TUNICA MUSCULARIS, TUNICA FASCIA (FASCIA BUCCOPHARYNGEA).
INNERVATION:
PLEXUS PHARYNGICUS, EXCEPT MUSCULUS STYLOPHARYNGEUS.
MOTOR FIBRES FROM CN X, SENSORY FROM CN IX. B
THE MOST UPPER PART OF NASOPHARYNX RECEIVED SENSORY FIBRES FROM CN V2.

NASOPHARYNX	CONTINUATION OF CAVITAS NASI INFERIORLY. SERVED AS A RESPIRATORY AREA. CONNECTS TO THE OROPHARYNX VIA ISTHMUS PHARYNGEALIS BORDERED BY PALATUM MOLLE, ARCUS PALATOPHARYNGEUS DEXTRA ET SINISTRA AND THE POSTERIOR WALL OF PHARYNX. RESIDED BY TONSILLA PHARYNGEALIS IN THE POSTERIOR PART, AND THE TUBA AUDITIVA IN THE LATERAL SIDE.
OROPHARYNX	FROM THE PALATUM MOLLE UNTILL UPPER PART OF EPIGLOTTIS. ANTERIORLY CONNECT TO CAVITAS ORALIS VIA ISTHMUS FAUCIUM. RESIDED BY SINUS TONSILARIS CONTAINING TONSILLA PALATINA.
LARINGOPHARYNX	BETWEEN THE UPPER PART OF EPIGLOTTIS UNTILL THE LOWER BORDER OF CARTILAGO CRICOIDEA, CONTINUES TO LARYNX. THE ENTRANCE IS AUDITUS LARYNGIS, AND AT THE BACK SIDE OF CARTILAGO ARYTENOIDEA AND CARTILAGO CRICOIDEA. THERE IS RECESSUS PIRIFORMIS IN THIS AREA.

MUSCULI OF THE PHARYNX

MUSCULUS	ORIGIN	INSERTIO	INNERVATION
EXTERNAL			
M. CONSTRICTOR PHARYNGIS SUPERIOR	HAMULUS, RAPHE PTERYGOMANDIBULARIS, LINEA MYOLYOIDEA MANDIBULAE	RAPHE PHARYNGIS	PLEXUS PHARYNGEALIS
M. CONSTRICTOR PHARYNGIS MEDIUS	LIGAMENTUM STYLOIDELUM AND CORNU MAJUS OSSIS HYOIDEI		
M. CONSTRICTOR PHARYNGIS INFERIOR	LINEA OBLIQUA CARTILAGO THYROIDEA AND CARTILAGO CRICOIDEA		

INTERNAL			
M. PALATOP HARYNGEUS	PALATUM DURUM, APONEUROSIS PALATINA SUPERIOR	LATERAL WALL OF PHARYNX	PLEXUS PHARYNGEALIS
M. SALPINGO PHARYNGEUS	TUBA PHARYNGOTYMPANICA (AUDITORIA)	AT THE WALL OF PHARYNX	
M. STYLO PHARYNGEUS	MEDIAL ASPECT OF PROCESSUS MEDIALIS	AT THE WALL OF PHARYNX	N. GLOSSO PHARYNGEUS

OTHER STRUCTURES:

1. A. SUBCLAVIA
   A. SUBCLAVIA DEXTRA COMES FROM TRUNCUS BRACHICEPHALICA WHILST A. SUBCALVIA SINISTRA FROM ARCUS AORTA. MUSCULUS SCALENUS ANTERIOR DIVIDES A. SUBCLAVIA INTO 3 PARTS; PART 1 GIVES OFF A. VERTEBRALIS, A. THORACICA INTERNA, DAN TRUNCUS THYROCERVICALIS. PART 2 GIVES OFF TRUNCUS COSTOCERVICALIS. PART 3 GIVES OFF A. SCAPULARIS DORSALIS.
2. A. CAROTIS COMMUNIS
   A. CAROTIS COMMUNIS DEXTRA BRANCHES OFF FROM TRUNCUS BRACHIOCEPHALICA, WHILST A. CAROTIS COMMUNIS SINISTRA FROM ARCUS AORTA. THIS ARTERY GIVES OFF A. CAROTIS EXTERNA AND A. CAROTIS INTERNA AT THE LEVEL OF OS HYOIDEUM.
3. V. JUGULARIS
   LIES AT THE SUPERFICIAL OF ANTERIOR COLLI, THERE ARE V. JUGULARIS DEXTRA ET SINISTRA. THESE TWO VEINS DRAINED INTO V. JUGULARIS EXTERNA AT THE LATERAL OF MUSCULUS STERNOCLEIDOMASTOIDEUS, AND V. JUGULARIS INTERNA THAT TRAVELS WITH A. CAROTIS COMMUNIS AND N. VAGUS INSIDE THE VAGINA CAROTICA IN THE DEEP OF ANTEROLATERAL COLLI.
4. ANSA CERVICALIS
   FORMED BY C1-C3 RAMI ANTERIORES MEDULLA SPINALIS. THIS ANSA INNERVATES MUSCULI INFRAHYOIDEI EXCEPT MUSCULUS THYROHYOIDEUS.
5. V. SUBCLAVIA
   DRAINED INTO V. CAVA SUPERIOR. RECEIVED FROM THE JUGULAR SYSTEM.

CHAPTER 7 NEUROANATOMY

NEUROANATOMY

ACTIVITY:

IN THIS CHAPTER, STUDENTS LEARN ABOUT THE STRUCTURES OF THE ENCEPHALON, MEDULLA SPINALIS, CRANIAL NERVES, ENTERIC PLEXUS AND SYMPATHETIC AND PARASYMPATHETIC NERVES' STRUCTURES. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT HUMAN NEUROANATOMY I.E. CENTRAL, PERIPHERAL AND AUTONOMIC NERVES SYSTEM.

TASK FOR STUDENTS!

1. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE CIRCULUS ARTERIOSUS WILLIS!

2. DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE BRAIN VESICLES AND STRUCTURES ACCORDING TO THEIR GROWTH AND DEVELOPMENT STAGES!

7. NEUROANATOMY

CRANIUM:

- NEUROCRANIUM: TO COVER THE ENCEPHALON, THE BASE IS FORMED BY 6 BONES: 1 OS FRONTALE, 1 OS ETHMOIDALE, 1 OS SPHENOIDALE, 2 OS TEMPORALE, 2 OS PARIETALE, 1 OS OCCIPITAL.
- VISCEROCRANIUM: TO FORM THE FACE, THESE ARE 15 BONES: 1 MANDIBULA 2 MAXILLA, 2 CONCHA NASALIS INFERIOR, 2 OS NASALE, 2 OS LACRIMALE, 1 VOMER, 1 OS ETHMOIDALE, 2 OS ZYGOMATICUM, 2 OS PALATINUM.

THREE OF FOSSAE BASIS CRANII:

1. FOSSA CRANII ANTERIOR: ANTERIOR TO OS FRONTALE.
2. FOSSA CRANII MEDIA: BETWEEN FOSSA CRANII ANTERIOR AND FOSSCA CRANII POSTERIOR
3. FOSSA CRANII POSTERIOR: POSTERIOR TO PARS PETROSA AND PARS MASTOIDEA OS TEMPORALE.

BONE STRUCTURE	DESCRIPTION	SIGNIFICANCE
ARCUS ZYGOMATICUS	THE PROMINENCE OF THE CHEEK BONE	FORMED BY PROCESSUS TEMPORALIS OSSIS ZYGOMATICUS AND PROCESSUS ZYGOMATICUS OSSIS TEMPORALIS
PALATUM DURUM	THE HARD PALATE	FORMED BY PROCESSUS PALATINUS MAXILLAE AND PARS HORIZONTALIS OSSIS PALATINI
OS FRONTALE	ANTERIOR ASPECT OF THE NEUROCRANIUM, THE FRONTAL PART OF THE VISCEROCRANIUM, RADIX ORBITA AND THE BASE OF FOSSA CRANII ANTERIOR	MARGO SUPRAORBITALIS AND FOSSA SUPRAORBITALIS TRAVELED BY NEUROVASCULAR SUPRAORBITALIS
OS PARIETALE	LATERAL ASPECT OF THE NEUROCRANIUM. LINEA TEMPORALIS SUPERIOR ET INFERIOR AS A MARGO SUPERIOR FOSSA TEMPORALIS.	SULCUS A. MENINGEA MEDIA, RESIDED BY A. MENINGEA MEDIA

OS OCCIPITALE	POSTERIOR ASPECT OF THE NEUROCRANIUM· PROTUBERANTIA OCCIPITALIS EXTERNA ATTACHED BY LIGAMENTUM NUCHAE· LINEA NUCHAE SUPERIOR ATTACHED 3 MUSCLES: MUSCULUS TRAPEZIUS, MUSCULUS STERNOCLEIDOMASTOIDEUS, MUSCULUS SPLENIUS CAPITIS· SULCUS SINUS TRANSVERSUS TRAVELED BY SINUS TRANSVERSUS· TUBERCULUM PHARYNGIEUM ATTACHED BY MUSCULUS CONSTRICTOR PHARYNGIS SUPERIOR· CONDYLUS OCCIPITALIS ARTICULATES TO FACIES ARTICULARIS SUPERIOR OF THE ATLAS·	CANALIS HYPOGLOSSUS TRAVELED BY N· HYPOGLOSSUS· FORAMEN JUGULARE FORMED BY OS TEMPORALE AND OS OCCIPITAL THAT CARRIES: N· CRANIALIS IX, X, XI, BULBUS SUPERIOR V· JUGULARIS INTERNA, SINUS SIGMOIDEUS, SINUS PETROSUS INFERIOR, AND MENINGEAL BRANCH OF A· PHARYNGEALIS ASCENDES AND OCCIPITALIS· FORAMEN MAGNUM CARRIES 3 STRUCTURES: MEDULLA OBLONGATA, A· VERTEBRALIS AND PLEXUS VENOSUS VERTEBRALIS, PARS SPINALIS N· CRANIALIS XI·
OS ETHMOIDALE	1· LAMINA CRIBOSA 2· LAMINA PERPENDICULAR 3·CHONCHAE NASALES MEDIALIS ET SUPERIOR 4· CRISTA GALLI	1· FORMS FORAMINA CRIBOSA THAT CARRIES NN· OLFACTORII (I)/FILA OLFACTORIA 2· FORMS SUPERIOR ASPECT OF THE VOMER· 3· FORMS SUPERIOR ASPECT OF THE LATERAL WALL OF THE SINUS ETHMOIDALIS 4· ATTACHED BY FALX CEREBRI
OS SPHENOIDALE	1· ALA MINUS: FORMS MARGO SUPERIOR OF FISSURA ORBITALIS SUPERIOR 2· ALA MAJUS: FORMS MARGO INFERIOR OF FISSURA ORBITALIS SUPERIOR 3· FORAMEN OVALE: TRAVELED BY: N· MANDIBULARIS AND A·	

	MENINGEA ACCESORIUS 4· FORAMEN ROTUNDUM: TRAVELED BY N· MAXILLARIS 5· FORAMEN SPINOSUM: TRAVELED BY VASA MENINGEA MEDIA AND RAMUS MENINGEUS NN· MANDIBULARIS 6· FORMAEN SPHENOPALATINA: TRAVELED BY A· SPHENOPALATINA AND N· SPHENOPALATINA TO CAVITAS NASI 7· LAMINA PTERYGOIDEUS MEDIA: HAMULUS ATTACHED BY MUSCULUS TENSOR VELI PALATINI TO PALATUM MOLLE 8· LAMINA PTERYGOIDEUS LATERAL: ATTACHED BY MUSCULUS PTERYGOIDEUS MEDIALIS AND MUSCULUS PTERYGOIDEUS LATERALIS 9· CANALIS OPTICUS: TRAVELED BY N· OPTICUS AND A· OPHTHALMICA 10· SINUS SPHENOIDALE: SINUS PARANASALIS PASSAGES TO RECESSUS SPHENOETHMOIDALE 11· SELLA TURSICA: FORMS FOSSA HYPOPHYSIS RESIDED BY GLANDULA HYPOPHYSIS· PROCESSUS CLINOIDEUS ANTERIOR ET POSTERIOR ATTACHED TO, THE DORSUM SELLAE IS A POSTERIOR BORDER OF SELLA TURSICA· 12· FISSURA ORBITALE SUPERIOR: TRAVELED BY: N· OCULOMOTORIUS, N· TROCHLEARIS, N· ABDUCENS, V· OPHTHALMICA SUPERIOR, N· OPHTHALMICUS· 13· FISSURA ORBITALE INFERIOR: SPACE BETWEEN OS SPHENOIDALE AND OS MAXILLA, CARRIES ZYGOMATICUS BRANCH OF N· MAXILLARIS·	
MAXILLA	COMPRISED OF THE CORPUS, PROCESSUS FRONTALIS, PROCESSUS ZYGOMATICUS, PROCESSUS PALATINUS, PROCESSUS ALVEOLARIS·	
MANDIBULA	COMPRISED OF CORPUS MANDIBULAE AND RAMI MANDIBULAE·	

OS TEMPORALE	RESIDED BETWEEN OS OCCIPITAL AND OS SPHENOIDALE, ONE OF THE BORDERS OF FOSSA CRANII MEDIA. HAS: PARS PETROSAL, PARS TYMPANICA, PARS MASTOIDEA, AND SQUAMA TEMPORALIS	
OS ZYGOMATICUM	LATERAL TO SPLANCHNOCRANIUM AND HAS FACIES MALARIS, FACIES ORBITALIS, FACIES TEMPORALIS.	
OS CONCHA NASALIS INFERIOR	AT THE LATERAL WALL OF CAVITAS NASI.	
OS PALATINUM	HAS PARS HORIZONTALIS AND PARS PERPENDICULARIS. OS PALATINUM IS AT THE DORSAL OF CAVITAS NASI AND PARTS OF PALATUM DURUM.	
OS NASALE	AT THE MEDIAL BORDER OF SUTURA INTERNASALIS. OS NASALE IS ONE OF THE BRODERS OF APERTURA PIRIFORMIS AND PARTS OF THE VENTRAL ALL OF CAVITAS NASI.	
OS LACRIMALE	AT THE MEDIAL BORDER OF CAVITAS ORBITALIS.	
VOMER	AT THE MEDIOSAGITAL PLANE, FORMS THE POSTERIOR SEPTUM NASI OSSEUM.	

ENCEPHALON		
PROCENCEPHALON		
STRUCTURE	**DESCRIPTION**	**SIGNIFICANCE**
	AREA OF THE LIMBIC SYSTEM: 1. GYRUS CINGULATUM 2. NUCLEI ANTERIORES THALAMI 3. NUCLEI AMYDALA DAN UNCUS 4. AREA PREFRONTALE 5. FORNIX: A. COLUMNAE B. CORPUS C. CRUS 6. FORMATIO HIPPOCAMPALIS A. GYRUS DENTATUS B. PES AND FIMBRIAE HIPPOCAMPUS (CORNU AMNONIS) C. SUBICULUM 7. GYRUS PARAHIPPOCAMPALIS BASAL GANGLIA, COMPRISED OF: 1. NUCLEUS CAUDATUS 2. PUTAMEN 3. GLOBUS PALLIDUS 4. CLAUSTRUM, TOGETHER WITH THE AMYGDALA. STRIATUM IS NUCLEUS CAUDATUS AND PUTAMEN. WHILST CORPUS STRIATUM ISNUCLEUS CAUDATUS, NUCLEUS LENTIFORMIS AND CLAUSTRUM. NUCLEUS LENTIFORMIS/LENTICULARIS COMPRISED OF PUTAMEN AND GLOBUS PALLIDUS. CENTRUM SEMIOVALE OF THE PROCENCEPHALON: 1. ASSOCIATION FIBRES. 2. PROJECTION FIBRES. 3. COMMISURE FIBRES	EXAMPLES OF CENTRUM SEMIOVALE: 1. U FIBER, FASCICULUS UNCINATUS, CINGULUM, FASCICULUS LONGITUDINALIS SUPERIOR, FASCICULUS LONGITUDINALIS INFERIOR, FASCICULUS FRONTOOCCIPITALIS SUPERIOR, FASCICULUS FROTOOCCIPITALIS INFERIOR, FORNIX. 2. AFFERENT AND EFFERENT FIBRES. 3. CORPUS CALLOSUM (ROSTRUM, GENU, TRUNCUS, SPLENIUM). AT THE CORONAL SECTION: 1. BETWEEN THALAMUS, NUCLEUS CAUDATUS, AND NUCLEUS LENTIFORMIS. 2. BETWEEN NUCLEUS LENTIFORMIS AND CLAUSTRUM. 3. BETWEEN CLAUSTRUM AND INSULA.

	CAPSULA: 1· INTERNA A PROJECTION FIBRE COMPRISED OF THE ANTERIOR EXTREMITY, GENU, POSTERIOR EXTREMITY, SUBLENTICULARE AND RETROLENTICULARE· CONTENT: CORTICOSPINAL AND CORTICOBULBAR TRACTS· 2· EXTERNA 3· EXTREMA	

DIENCHEPHALON	4 AREA: 1· THALAMUS 2· HYPOTHALAMUS 3· SUBTHALAMUS 4· EPITHALAMUS	4· INCLUDES NUCLEI HABENULARES AND CORPUS PINEALE· THIS IS ONE OF THE CIRCUMVENTRICULAR ORGAN TOGETHER WITH AREA POSTREMA, NEUROHYPOPHYSIS, ORGAN SUBCOMMISURAL, HABENULA, ORGAN SUBFORNICAL, ORGANUM VASCULOSUM LAMINA TERMINALIS, EMINENTIA MEDIANA·
CEREBELLUM (PART OF THE ROMBENCEPHALON, WITH PONS AND MEDULLA OBLONGATA)	TWO HEMISPHERES, DEXTRA ET SINISTRA AT THE LATERAL SIDE, CONNECTED BY THE PARAVERMIS TO THE VERMIS CENTRALIS· EACH HEMISPHERE HAS A CORTEX AND MEDULLA WITH THE TREE-LIKE ARBORISATION CALLED ARBOR VITAE· SUPERIOR VERMIS AND ITS CONNECTED HEMISPHERE: 1· LINGULA 2· LOBULUS CENTRALIS: ALA	CONNECTED TO THE: 1· MESENCEPHALON BY PEDUNCULUS CEREBELLI SUPERIOR (BRACHIUM CONJUNCTIVUM)· 2· PONS BY PEDUNCULUS CEREBELLI MEDIUS (BRACHIUM PONTIS)· 3· MEDULLA OBLONGATA BY PEDUNCULUS PECIALT INFERIOR (CORPUS RESTIFORME)·

	LOBULI CENTRALIS 3· CULMEN: LOBULUS QUADRANGULARIS 4· DECLIVE: LOBULUS SIMPLEX 5· FOLIUM: LOBULUS SEMILUNARIS CRANIALIS INFERIOR VERMIS AND ITS CONNECTED HEMISPHERE: 1· TUBE : LOBULUS SEMILUNARIS CAUDALIS 2· PYRAMIS: LOBULUS BIVENTER 3· UVULA: TONSILLA 4· NODULUS: FLOCCULUS·	
BRAINSTEM	1· MESENCEPHALON 2· PONS 3· MEDULLA OBLONGATA VENTRAL SIDE: 1· AT THE LATERAL OF SULCUS MEDIANA VENTRALIS IS PYRAMIS 2· AT THE LATERAL OF PYRAMIS IS OLIVA DORSAL SIDE: 1· THE FLOOR OF VENTRICULUS QUARTUS 2· GENU OF N· CRANIALIS VII FIBRES WHEN CIRCLING NUCLEUS N· CRANIALIS VI· 3· CONTINUATION OF TRACTUS COLUMNA DORSALIS AT THE MEDIAL AND LATERAL SIDE 4· STALK OF CEREBELLUM AT THE SUPERIOR OF FOSSA RHOMBOIDEA 5· FOUR CORPORA QUADRIGEMINA LATERAL SIDE: 1· CORPUS GENICULATUM	CONTENTS: 1· NUCLEUS OF NN· CRANIALES 2· FORMATIO RETICULARIS· AT THE DORSAL SIDE: 1· FOSSA RHOMBOIDEA 2· GENU INTERNUM 3· FASCICULUS CUNEATUS AT THE CRANIAL TUBERCULUM CUNEATUS, AND FASCICULUS GRACILIS AT THE CRANIAL TUBERCULUM GRACILLIS· 4· PEDUNCULUS CEREBELLARIS SUPERIOR, MEDIAL AND INFERIOR 5· 2 COLLICULI SUPERIOR DAN 2 COLLICULI INFERIOR

	LATERALIS AND TRACTUS OPTICUS CONNECTED TO COLLICULI SUPERIOR BY BRACHIUM COLLICULUS SUPERIOR· 2· GENICULATUM MEDIALIS CONNECTED TO COLLICULI INFERIOR BY BRACHIUM COLLICULUS INFERIOR·	

MENINGES

DURAMATER: 1· FALX CEREBRI 2· TENTORIUM CEREBELLI 3· FALX CEREBELLI 4· DIAPHRAGMA SELLAE	LAMINA: 1· LAMINA INTERNA/ MENINGEALE 2· LAMINA EXTERNA/ PERIOSTEALE	INNERVATION: NN· TRIGEMINUS, VAGUS, NN· CERVICALES 1-3, TRUNCUS SYMPATHICUS· BLOOD SUPPLY: A· CAROTIS INTERNA, A· PHARYNGEA ASCENDENS, A· OCCIPITALIS, A· VERTEBRALIS, A· MENINGEA MEDIA· VV· MENINGEAE RUN AT STRATUM ENDOSTEALE DURA MATER, WHEREAS V· MENINGEA MEDIA DRAINED INTO PLEXUS VENOSUS PTERYGOIDEUS OR SINUS SPHENOPARIETALIS·
ARACHNOID MATER	VILLI ARACHNOIDALES	SPATIUM SUBARACHNOID CONTAINS LIQUOR CEREBROSPINALIS CISTERNAE: 1· CISTERNA MAGNA 2· CISTERNA PONTINE 3· CISTERNA SUPRASELLARIS 4· CISTERNA INTERPENDUCULARIS 5· CISTERNA SYLVIUS
PIA MATER	ATTACHED TO THE ENCEPHALON	

VASCULARISATION (CIRCULUS ARTERIOSUS WILLIS)

A. VERTEBRALIS	BRANCHES: 1. A. SPINALIS ANTERIOR 2. A. INFERIOR POSTERIOR CEREBELLI	FORMED A. BASILLARIS, BRANCH OF A. SUBCLAVIA WHICH RUNS IN FORAMEN TRANSVERSARIUM OF THE CERVICAL VERTEBRAE.
A. BASILLARIS	BRANCHES: 1. A. CEREBRI POSTERIOR 2. A. INFERIOR ANTERIOR CEREBELLI 3. A. CEREBELLI SUPERIOR 4. A. PONTIS 5. A. LABYRINTHI 6. A. SPINALIS POSTERIOR 8. A. MESENCEPHALICAE	AT THE VENTRAL PONS, LIES AT SULCUS BASILARIS PONTIS.
A. CAROTIS INTERNA (BRANCHES I.E. A. OPHTHALMICAE, A. CHOROIDEA ANTERIOR), ALSO GIVES OFF:		
A. CEREBRI ANTERIOR	SUPPLY THE CEREBRUM MOSTLY AT THE AREA NEAR THE FISSURA LONGITUDINALIS CEREBRI, FOR THE LOWER LIMB AND THE TRUNK OF THE BODY.	THE LEFT AND RIGHT ARE CONNECTED BY A. COMMUNICANS ANTERIOR
A. CEREBRI MEDIA	CVA MOST COMMON SITE. SUPPLY AREA OF THE CEREBRUM AT THE CONVEXITY, RESPONSIBLE FOR THE UPPER LIMB, FACE AND TONGUE, ALSO EXTERNAL GENITALS (SHOWED AT THE HOMUNCULUS CEREBRI OF THE PRECENTRAL AND POST-CENTRAL GYRUS FOR THE MOTOR AND SENSORY AREA).	CONNECTED TO EACH SIDE OF A. CEREBRI MEDIA BY A. COMMUNICANS POSTERIOR.

SINUS DURAE MATRIS

SINUS SAGITTALIS SUPERIOR	RECEIVED FLOW FROM GRANULATION ARACHNOIDALES	DRAINED INTO CONFLUENS SINUUM
SINUS SAGITTALIS INFERIOR	RECEIVED FLOW FROM VV. CEREBRALES	DRAINED INTO SINUS RECTUS, THEN INTO V. JUGULARIS INTERNA
SINUS RECTUS	RECEIVED FLOW FROM SINUS SAGITTALIS INFERIOR AND VEIN OF GALEN	DRAINED INTO KE V. JUGULARIS INTERNA
CONFLUENS SINUUM	RECEIVED FLOW FROM SINUS RECTUS AND SINUS SAGITTALIS SUPERIOR	DRAINED INTO SINUS TRANSVERSUS
SINUS TRANSVERSUS	RECEIVED FLOW FROM CONFLUENCE SINUUM	DRAINED INTO SINUS SIGMOIDEUS
SINUS SIGMOIDEUS		DRAINED INTO V. JUGULARIS INTERNA
SINUS PETROSUS SUPERIOR	RECEIVED FLOW FROM SINUS CAVERNOSUS	DRAINED INTO SINUS SIGMOIDEUS
SINUS PETROSUS INFERIOR		V. JUGULARIS INTERNA
SINUS OCCIPITALIS		CONFLUENS SINUUM

SINUS CAVERNOSUS	RECEIVED FLOW FROM VV·OPHTHALMICAE, PLEXUS PTERYGOIDEUS	DRAINED INTO SINUS PETROSUS· CONNECTED BY INTERCAVERNOSUS· AT THIS SINUS CONTAINS: N· CRANIALIS III, IV, V1, V2, AND ALSO SURROUNDS A· CAROTIS INTERNA AND NEAR N· CRANIALIS VI·

VENTRICLE SYSTEM

LATERAL VENTRICLES	VENTRICULUS LATERALIS DEXTRA ET SINISTRA ARE CONNECTED BY FORAMEN INTERVENTRICULARE MONROE (AND EACH HAS CORNU VENTRICULI LATERALIS): • PARS ANTERIOR • PARS INFERIOR • PARS POSTERIOR • TRUNCUS/ PARS CENTRALIS· IN THE MEDIAN WALL IS COVERED BY SEPTUM PELLUCIDUM·
VENTRICLE III AQUADUCTUS CEREBRI SYLVII VENTRICLE IV	VENTRICULI TERTII IS CONNECTED TO THE VENTRICULI QUARTII BY AQUADUCTUS CEREBRI SYLVII· THE AQUADUCTUS CEREBRII IS THE NARROWEST PART OF THE VENTRICLE SYSTEM· THE STENOSIS HERE MAY CAUSE HYDROCEPHALUS· THE FOSSA RHOMBOIDEA IS THE FLOOR OF THE FOURTH VENTRICLE, WHERE MANY STRUCTURES RESIDED I·E· COLLICULUS FACIALIS, TRIGONUM VAGI ET HYPOGLOSSI·
PLEXUS CHOROIDEUS	PRODUCES LIQUOR CEREBROSPINALIS WHICH IS THE CONTENT OF THE VENTRICLES AND THE CANALIS CENTRALIS MEDULLA SPINALIS· PLEXUS CHOROIDEUS RESIDED THE WALL OF THE VENTRICLES·

N. CRANIALIS

CRANIAL NERVE (CN)	NAME	DESCRIPTION
CN I	OLFACTORIUS	THE CELL BODIES OF CN I ARE IN THE NASAL MUCOSA AND THEIR FIBRES ASCEND THROUGH THE CRIBRIFORM PLATE OF THE ETHMOIDAL BONE TO SYNAPSE IN THE OLFACTORY BULB OF THE ENCEPHALON.
CN II	OPTICUS	TOGETHER WTH THE EYE ARE AN OUTGROWTH OF THE EMBRYONIC BRAIN AND THUS ENVELOPED IN MENINGES. THE CELL BODIES ARE IN THE RETINA AND THE FIBRES OF CN II FORM THE OPTIC NERVE THAT AXONS AXONS FROM THE NASAL HALVES OF THE RETINA CROSS OVER BUT THOSE FROM THE TEMPORAL SIDE CONTINUE ON THE SAME SIDE IN CHIASMA OPTICUM. THESE THEN FORM THE TRACTUS OPTICUS ON EACH SIDE.
CN III	OCULO MOTORIUS	STARTS FROM THE BRAIN JUST IN FRONT OF THE PONS, RUN ALONG THE CAVERNOUS SINUS AND ENTERS THE ORBIT THROUGH THE FISSURA ORBITALIS SUPERIOR. SUPPLIES THE LEVATOR PALPEBRAE SUPERIORIS, SUPERIOR, INFERIOR AND MEDIAL RECTUS AND THE INFERIOR OBLIQUE MUSCLES. ALSO CARRIES PARASYMPATHETIC FIBRES TO THE CILIARY GANGLION WHERE THE FIBRES SYNAPSE AND THEN PASS IN THE N. CILLIARIS BREVIS TO THE SPHINCTER PUPILLAE AND THE CILIARY MUSCLES.
CN IV	TROCHLEARIS	FROM THE DORSAL SURFACE OF THE BRAIN JUST BEHIND THE INFERIOR COLLICULUS, CIRCLES THE MIDBRAIN AND ENTERS THE CAVERNOUS SINUS. IT ENTERS THE ORBIT THROUGH THE FISSURA ORBITALIS SUPERIOR AND SUPPLIES THE SUPERIOR OBLIQUE MUSCLE.

CN V	TRIGEMINUS	STARTS AT THE SIDE OF THE PONS BY A MOTOR AND A SENSORY ROOT. THE SENSORY ROOT CARRIES THE TRIGEMINAL GANGLION WHICH CONSISTS OF THE CELL BODIES OF THE SENSORY AXONS AND LIES IN A DEPRESSION ON THE PETROUS TEMPORAL BONE. IT THEN DIVIDES INTO OPHTHALMIC, MAXILLARY AND MANDIBULAR DIVISIONS. THE MOTOR ROOT FORMS PART OF THE MANDIBULAR DIVISION. CN VI. THIS NERVE TRAVERSES THE CAVERNOUS SINUS AND ENTERS THE ORBIT VIA THE SUPERIOR ORBITAL FISSURE WHERE IT DIVIDES INTO FRONTAL, LACRIMAL AND NASOCILIARY BRANCHES. THE FRONTAL NERVE LIES JUST UNDER THE ROOF OF THE ORBIT AND DIVIDES INTO SUPRAORBITAL AND SUPRATROCHLEAR NERVES WHICH EMERGE FROM THE ORBIT AND SUPPLY THE FRONT OF THE SCALP. THE LACRIMAL NERVE LIES LATERALLY AND SUPPLIES THE SKIN OF THE EYELIDS AND FACE. IT ALSO CARRIES PARASYMPATHETIC SECRETOMOTOR FIBRES FROM THE SPHENOPALATINE GANGLION TO THE LACRIMAL GLAND. THE NASOCILIARY NERVE CROSSES THE OPTIC NERVE AND RUNS ALONG THE MEDIAL WALL OF THE ORBIT TO EMERGE ONTO THE FACE AS THE INFRATROCHLEAR NERVE. IT GIVES OFF THE ETHMOIDAL NERVES TO THE ETHMOIDAL SINUSES AND THE N. CILLIARIS LONGUS TO THE EYE WHICH CARRY SENSORY FIBRES FROM THE CORNEA AND SYMPATHETIC FIBRES TO THE DILATOR PUPILLAE. ALL BRANCHES OF THE OPHTHALMIC DIVISION ARE SENSORY. CN V2. THIS NERVE LEAVES THE CRANIAL CAVITY THROUGH THE FORAMEN ROTUNDUM AND ENTERS THE FOSSA PTERYGOPALATINA. IT HAS THE GANGLION SPHENOPALATINA ATTACHED TO IT WHICH TRANSMITS PARASYMPATHETIC FIBRES TO THE LACRIMAL GLAND VIA COMMUNICATIONS WITH THE LACRIMAL NERVE. THE BRANCHES OF THE MAXILLARY NERVE ARE THE NN. PALATINUS

		MAJUS ET MINUS TO THE HARD AND SOFT PALATES, THE SPHENOPALATINE NERVE TO THE NASAL CAVITY AND THENCE VIA THE NASAL SEPTUM, TO THE INCISIVE FOSSA TO SUPPLY THE HARD PALATE· N· DENTALIS POSTERIOR SUPERIOR ENTERS THE BACK OF THE MAXILLA AND SUPPLIES THE TEETH· N· MAXILLARIS LEAVES THE FOSSA SPHENOPALATINA VIA THE INFERIOR ORBITAL FISSURE, TRAVELS IN THE FLOOR OF THE ORBIT WHERE IT GIVES THE MIDDLE AND ANTERIOR SUPERIOR DENTAL NERVES, AND EMERGES ONTO THE FACE THROUGH THE FORAMEN INFRAORBITA AS THE N· INFRAORBITALIS· ALL BRANCHES OF THE MAXILLARY DIVISION ARE SENSORY· CN V3· THIS NERVE LEAVES THE CRANIAL CAVITY THROUGH THE FORAMEN OVALE AND IMMEDIATELY BREAKS UP INTO BRANCHES· THESE ARE: THE MAINLY SENSORY N· ALVEOLARIS INFERIOR, WHICH ENTERS THE FORAMEN MANDIBULAE TO SUPPLY THE TEETH BEFORE EMERGING ONTO THE FACE AS THE N· MENTALIS· THIS NERVE DOES HAVE ONE MOTOR BRANCH, THE N· MYLOHYOIDEUS, WHICH SUPPLIES THE MYLOHYOID AND THE ANTERIOR BELLY OF THE DIGASTRIC· THE N· LINGUALIS LIES CLOSE TO THE MANDIBULA JUST BEHIND THE THIRD MOLAR AND THEN PASSES FORWARDS TO SUPPLY THE TONGUE· IT IS JOINED BY THE CHORDA TYMPANI WHICH CARRIES TASTE FIBRES FROM THE ANTERIOR TWO-THIRDS OF THE TONGUE AND PARASYMPATHETIC SECRETOMOTOR FIBRES TO THE SUBMANDIBULAR AND SUBLINGUAL SALIVARY GLANDS· THESE SYNAPSE IN THE SUBMANDIBULAR GANGLION WHICH IS ATTACHED TO THE LINGUAL NERVE· THE AURICULOTEMPORAL NERVE SUPPLIES SENSORY FIBRES TO THE SIDE OF THE SCALP· IT ALSO CARRIES PARASYMPATHETIC SECRETOMOTOR FIBRES, WHICH HAVE SYNAPSED IN THE OTIC

		GANGLION, TO THE PAROTID GLAND. THE BUCCAL NERVE CARRIES SENSORY FIBRES FROM THE FACE. THERE ARE MUSCULAR BRANCHES TO THE MUSCLES OF MASTICATION, INCLUDING THE DEEP TEMPORAL NERVES WHICH SUPPLY TEMPORALIS. THE MANDIBULAR DIVISION THUS CONTAINS BOTH MOTOR AND SENSORY BRANCHES.
CN VI	ABDUCENS	LEAVES THE BRAIN AT THE POSTERIOR BORDER OF THE PONS AND HAS A LONG INTRACRANIAL COURSE (THENCE IS OFTEN THE FIRST NERVE TO BE AFFECTED IN RAISED INTRACRANIAL PRESSURE) TO THE CAVERNOUS SINUS, WHERE IT IS CLOSELY APPLIED TO THE A. CAROTIS INTERNA, AND THENCE TO THE ORBIT VIA THE SUPERIOR ORBITAL FISSURE. IT SUPPLIES THE MUSCULUS RECTUS LATERALIS.
CN VII	FACIALIS	LEAVES THE BRAIN NEAR THE CEREBELLUM AND PASSES LATERALLY INTO THE INTERNAL AUDITORY MEATUS. THIS NERVE THEN REACHES THE MEDIAL WALL OF THE MIDDLE EAR AND TURNS BACKWARDS AND DOWNWARDS TO LEAVE THE SKULL VIA THE STYLOMASTOID FORAMEN; THEN TRAVERSES THE PAROTID GLAND, IN WHICH IT DIVIDES INTO FIVE BRANCHES (TEMPORAL, ZYGOMATIC, BUCCAL, MARGINAL MANDIBULAR AND CERVICAL) WHICH ARE DISTRIBUTED TO THE MUSCLES OF FACIAL EXPRESSION, THE PLATYSMA AND THE POSTERIOR BELLY OF THE DIGASTRIC. CN VII GIVES OFF THE GREATER PETROSAL BRANCH IN THE MIDLLE EAR, WHICH CARRIES PARASYMPATHETIC FIBRES TO THE SPHENOPALATINE GANGLION AND THENCE TO THE LACRIMAL GLAND. ALSO IT GIVES OFF THE CHORDA TYMPANI WHICH JOINS THE LINGUAL NERVE AND IS DISTRIBUTED WITH IT. THE SENSORY FIBRES IN THE CHORDA TYMPANI HAVE THEIR CELL BODIES IN THE GANGLION GENICULATUM WHICH LIES ON THE FACIAL NERVE WHERE IT TURNS DOWNWARDS.

CN VIII	VESTIBULO COCHLEARIS	LEAVES THE BRAIN NEXT TO THE CN VII AND ENTERS THE INTERNAL AUDITORY MEATUS. IT DIVIDES INTO VESTIBULAR AND COCHLEAR NERVES.
CN IX	GLOSSO PHARYNGEUS	LEAVES THE BRAIN AT THE SIDE OF THE MEDULLA AND PASSES THROUGH THE JUGULAR FORAMEN, CURVES FORWARDS BETWEEN THE INTERNAL AND EXTERNAL CAROTID ARTERIES TO ENTER THE PHARYNX BETWEEN THE SUPERIOR AND MIDDLE CONSTRICTORS. CN IX SUPPLIES SENSORY FIBRES TO THE POSTERIOR ONE THIRD OF THE TONGUE (INCLUDING TASTE) AND THE PHARYNX. IT ALSO GIVES A BRANCH TO THE CAROTID BODY AND SINUS.
N X	VAGUS	FROM THE SIDE OF THE MEDULLA AND PASSES THROUGH THE JUGULAR FORAMEN WHERE THEN JOINED BY THE ACCESSORY NERVE BUT THE SPINAL ROOT OF THE ACCESSORY LEAVES IT AGAIN ALMOST IMMEDIATELY. THE CRANIAL ROOT IS DISTRIBUTED WITH THE VAGUS (HENCE IS CALLED ACCESSORY TO THE VAGUS). THE VAGUS CARRIES TWO GANGLIA FOR THE CELL BODIES OF ITS SENSORY FIBRES, DESCENDS BETWEEN THE INTERNAL CAROTID ARTERY AND THE JUGULAR VEIN, WITHIN THE CAROTID SHEATH, AND ENTERS THE THORAX. IN THE NECK THE VAGUS (AND CRANIAL ROOT OF THE ACCESSORY) GIVES THE FOLLOWING BRANCHES: • THE PHARYNGEAL BRANCH WHICH RUNS BELOW AND PARALLEL TO THE GLOSSOPHARYNGEAL NERVE AND SUPPLIES THE STRIATED MUSCLE OF THE PALATE AND PHARYNX. • SUPERIOR AND INFERIOR CARDIAC BRANCHES WHICH DESCEND INTO THE THORAX TO TAKE PART IN THE CARDIAC PLEXUSES. THE SUPERIOR LARYNGEAL NERVE WHICH DIVIDES INTO INTERNAL AND EXTERNAL LARYNGEAL NERVES. THE FORMER ENTERS THE LARYNX BY

		PIERCING THE THYROHYOID MEMBRANE AND IS SENSORY TO THE LARYNX ABOVE THE LEVEL OF THE VOCAL CORDS, AND THE LATTER IS MOTOR TO THE CRICOTHYROID MUSCLE· • THE RECURRENT LARYNGEAL NERVE· ON THE RIGHT SIDE IT LOOPS UNDER THE SUBCLAVIAN ARTERY BEFORE ASCENDING TO THE LARYNX BEHIND THE A· CAROTID COMMUNIS· ON THE LEFT SIDE IT ARISES FROM THE VAGUS JUST BELOW THE ARCH OF THE AORTA AND ASCENDS TO THE LARYNX IN THE GROOVE BETWEEN THE TRACHEA AND OESOPHAGUS· THE RECURRENT LARYNGEAL NERVES SUPPLY ALL THE MUSCLES OF THE LARYNX EXCEPT FOR CRICOPHARYNGEUS AND ARE SENSORY TO THE LARYNX BELOW THE VOCAL CORDS·
CN XI	ACCESSORIUS	THE CRANIAL ROOT COMES OUT FROM THE SIDE OF THE MEDULLA WITH THE VAGUS AND IS DISTRIBUTED WITH IT· THE SPINAL ROOT ARISES FROM THE SIDE OF THE UPPER FIVE SEGMENTS OF THE SPINAL CORD, ENTERS THE CRANIAL CAVITY THROUGH THE FORAMEN MAGNUM AND JOINS THE VAGUS· THIS FIBRE LEAVES THE VAGUS BELOW THE JUGULAR FORAMEN AND PASSES BACKWARDS TO ENTER STERNOMASTOID, WHICH IT SUPPLIES; THEN CROSSES THE POSTERIOR TRIANGLE TO SUPPLY TRAPEZIUS·
CN XII	HYPO GLOSSUS	STARTS FROM THE SIDE OF THE MEDULLA VENTRAL TO THE VAGUS AND CRANIAL ACCESSORY AND PASSES THROUGH THE HYPOGLOSSAL CANAL· BELOW THE SKULL WHERE JOINED BY THE ANTERIOR RAMUS OF C1 AND THEN RUNS DOWNWARDS AND FORWARD, ACROSS THE CAROTID SHEATH AND THE UPWARD LOOP OF THE LINGUAL ARTERY TO ENTER THE TONGUE· CN XII SUPPLIES THE INTRINSIC AND EXTRINSIC MUSCLES OF THE TONGUE; ALSO GIVES OFF THE

		DESCENDENS HYPOGLOSSI BUT THIS IS ACTUALLY COMPOSED OF FIBRES FROM C1 WHERE THESE FIBRES JOIN THE DESCENDENS CERVICALIS, DERIVED FROM C2 AND C3 TO FORM THE ANSA CERVICALIS. FROM THIS, BRANCHES ARISE TO SUPPLY THE 'STRAP MUSCLES', I.E. STERNOTHYROID, STERNOHYOID, THYROHYOID AND OMOHYOID.

MEDULLA SPINALIS

FROM THE DECUSSATIO PYRAMIDALIS – LI TO LII IN THE ADULT. THE SUPERFICIAL PREDOMINANT WHITE MATTER IS CALLED FUNICULUS/ COLLUMNA WHILST THE DEEPER PART COMPRISED PREDOMINANTLY BY THE GRAY SUBSTANCE IS CALLED HORN/ CORNU.

THERE ARE 3 AREA IN THE CORNU:

1. CORNU DORSAL, COMPRISED OF SUBSTANSIA GELATINOSA, NUCLEUS PROPRIUS, AND SUBSTANSIA VISCERALIS SECUNDARIA.
2. CORNU INTERMEDIUM, COMPRISED OF CORNU INTERMEDIOLATERALE AND CORNU INTERMEDIOMEDIALE.
3. CORNU VENTRAL, COMPRISED OF MEDIAL, LATERAL (NUCLEUS VENTROLATERALIS, NUCLEUS DORSOLATERALIS, NUCLEUS RETRODORSOLATERALIS), AND CENTRAL GROUPS.

FUNICULUS/COLUMNA MEDULLA SPINALIS COMPRISED OF TRACTUS ASCENDENS:

1. TRACTUS COLLUMNA DORSALIS
2. TRACTUS SPINOTHALAMICUS LATERAL
3. TRACTUS SPINOCEREBERALLIS DORSALIS
4. TRACTUS SPINORETICULARIS
5. TRACTUS SPINOTHALAMICUS ANTERIOR
6. TRACTUS SPINOCEREBELLARIS VENTRALIS.

MEDULLA SPINALIS IS ENVELOPED BY THE MENINGX (MENINGES SPINALIS), AND IS INNERVATED BY RAMI MENINGEI NN. SPINALES.

BLOOD SUPPLY OF MEDULLA SPINALIS:

1. A. VERTEBRALIS
2. A. CERVICALIS ASCENDENS
3. A. CERVICALIS PROFUNDUS
4. A. INTERCOSTAL
5. A. LUMBALIS
6. A. SACRALIS LATERALIS.

THE VEINS OF MEDULLA SPINALIS:

1. VV. RADICULARES
2. VV. MEDULLARES POSTERIORES

3. VV. MEDULLARES ANTERIORES,
ALL DRAINED INTO VV. SPINALES ANTERIORES ET POSTERIORES AND THEN TO PLEXUS INTERVERTEBRALIS INTERNUS AND EXTERNUS.

FROM THE MEDULLA SPINALIS RAISED:
1. NN. SPINALES CERVICALES (C1-C8)
2. NN. SPINALES THORACICI (T1-T12)
3. NN. SPINALES LUMBALES (L1-L5)
4. NN. SPINALES SACRALES (S1-S5)
5. NN. SPINALES COCCYGIS (CO).

RADIX ANTERIOR AND POSTERIOR FORM NN. SPINALES WHILST THE GANGLION DORSALIS IS RESIDED BY THE AFFERENT CELLS FROM THE SOMATIC AND VISCERAL SYSTEM.

SYSTEMA NERVOSUM ENTERICUM
RESIDED IN THE WALL OF THE INTESTINE, AND SERVES A UNIQUE ARRANGEMENT OF THIS HOLLOW ORGAN THENCE CAN WORK INDEPENDENTLY FROM THE ENCEPHALON.
COMPRISED OF:
1. PLEXUS MYENTERICUS, BETWEEN LAMINA CIRCULARIS AND MUSCULUS LONGITUDINALIS OF THE INTESTINE.
2. PLEXUS SUBMUCOSUS, BETWEEN LAMINA CIRCULARIS AND SUBMUCOSA OF INTESTINE.

SISTEMA NERVOSUM AUTONOMICUM
WORKS IN HARMONY TO BALANCE THE HOMEOSTASIS OF THE VISCERA AND GLANDULAE OF THE BODY.
1. SYMPATHETIC
FROM INTERMEDIOLATERAL NEURONS OF CORNU LATERAL ON THE LEVEL OF THORACOLUMBAL OF THE MEDULLA SPINALIS (T1-L2). ONE OF THE STRUCTURES THAT PASS THROUGH PARAVERTEBRAL AREA IS TRUNCUS SYMPATHICUS AND ITS GANGLIA.
2. PARASYMPATHETIC
FROM THE CRANIOSACRALIS BRANCHES OF THE CRANIAL NERVES AND THE MEDULLA SPINALIS, INCLUDING 4 GANGLIAS IN THE CRANIUM: CILLIARIS, PTERYGOPALATINA, SUBMANDIBULARE, AND OTICUM FOR ORGAN IN HEAD AND NECK REGION. FROM N. VAGUS (FOR VISCERAL ORGAN IN THORAX AND ABDOMEN, TO 2/3 PROXIMAL OF COLON TRANSVERSUM), ALSO FROM NN. S2-S4 FOR ORGAN IN THE 1/3 DISTAL OF COLON TRANSVERSUM AND IN THE PELVIS.

CHAPTER 8 BACK

BACK

ACTIVITY:

IN THIS CHAPTER, STUDENTS LEARN ABOUT THE STRUCTURES OF THE BACK INCLUDING THE BONES, SOFT TISSUE, VESSELS, NERVES AND THE CONTENT OF SPECIFIC AREAS. THE MAIN FUNCTIONS OF SOME STRUCTURES ARE COVERED TO RELATE MORE TO THE CLINICAL PURPOSES.

OBJECTIVE:

UPON COMPLETING THIS CHAPTER, STUDENTS UNDERSTAND ABOUT THE ANATOMY OF HUMAN'S BACK.

TASK FOR STUDENTS!

1· DRAW A COMPLETE SCHEMATIC DIAGRAM OF THE BACK MUSCLES AND ITS INNERVATION!

8. BACK

MUSCLES OF THE BACK/ REGIO DORSALIS EXCEPT TO THOSE AT THE POSTERIOR AREA OF THE COLLI, THE THORAX AND ABDOMEN DISCUSSED ABOVE ARE SHOWN IN THE TABLE BELOW.

TABLE OF SUPERFICIAL BACK MUSCLES

MUSCLE	ORIGIN	INSERTION	ACTION	INNERVATION	BLOOD SUPPLY
TRAPEZIUS	VERTEBRAE CVII-TXII, LIG. NUCHAE, OS OCCIPITALE	CLAVICULA, ACROMION, SPINA SCAPULAE	ELEVATION, RETRATCTION, DEPRESSION AND ROTATION OF SCAPULAE	RADIS SPINALIS N. XI, NN. C3-C4	R. SUPERFICIALIS A. CERVICALIS TRANSVERSALIS
LATISSIMUS DORSI	TVII, COSTAE X-XII, SACRUM, FASCIA THORACOLUMBARIS, CRISTA ILIACA,	SULCUS INTERTUBERCULARIS OS HUMERI	EXTENTION, ADDUCTION, MEDIAL ROTATOR OF HUMERUS	N. THORACODORSALIS (C6-C8)	A. THORACO DORSALIS
LEVATOR SCAPULAE	PROCESSUS TRANSVERSUS CI-CIV	ANGULUS SUPERIOR SCAPULAE	ELEVATION AND ROTATION OF SCAPULAE,	NN. C3-C5, N. DORSALIS SCAPULARIS (C4-C5)	A. CERVICALIS TRANSVERSALIS
RHOMBOIDEUS MAJOR	PROCESSUS SPINOSUS TII-TV	MARGO MEDIALIS SCAPULAE	RETRACTION AND ROTATION OF SCAPULAE	N. DORSALIS SCAPULARIS (C4-C5)	
RHOMBOIDEUS MINOR	PROCESSUS SPINOSUS CVII-TI				

TABLE OF DEEP BACK MUSCLES				
MUSCULUS	**ORIGIN**	**INSERTION**	**ACTION**	**INNERVATION**
MM. ERECTOR SPINAE, EXTEND FROM THE SKULL TO THE SACRUM				
ILIOCOSTALIS	CRISTA ILIACA, SACRUM, COSTAE	FASCIA THORACOLUMBARIS, COSTAE, VERTEBRAE CERVICALES	BILATERALLY EXTEND COLUMNA VERTEBRALE, UNILATERALLY LATERAL FLEXION OF COLUMNA VERTEBRALE	SEGEMENTALLY INNERVATED BY RAMI DORSALES NN. SPINALES AT EACH LEVEL THEY ATTACHED TO
LONGISSIMUS	FASCIA THORACODORSALIS, VERTEBRAE CERVICALIS ET THORACICAE	VERTEBRAE, PROCESSUS MASTOIDEUS, PROCESSUS OS TEMPORALE		
SPINALIS	PROCESSUS SPINOSUS VERTEBRALIS	PROCESSUS SPINOSUS VERTEBRAE		
MM. TRANSVERSOSPINALES				
SEMI SPINALIS	PROCESSUS TRANSVERSUS VERTEBRAE THORACICAE	PROCESSUS SPINOSUS VERTEBRAE CERVICALES ET THORACICAE, OS OCCIPITALE	EXTENTION OF COLUMNA VERTEBRALE AND ROTATION OF COLUMNA VERTEBRALE	SEGEMENTALLY INNERVATED BY RAMI DORSALES NN. SPINALES AT EACH LEVEL THEY ATTACHED TO
MULTIFIDUS	SACRUM, PROCESSUS TRANSVERSUS VERTEBRAE LUMBARES, THORACICAE ET CERVICALES	PROCESSUS SPINOSUS VERTEBRAE THORACICAE, LUMBARES		
ROTATORES	PROCESSUS TRANSVERSUS CII TO SACRUM	LAMINA OF IMMEDIATE ORIGIN		

MUSCULUS	ORIGIN	INSERTION	ACTION	INNERVATION
SPLENIUS CAPITIS	LIG. NUCHAE, PROCESSUS SPINOSUS CVII-TIV	PROCESSUS MASTOIDEUS OS TEMPORALE, OS OCCIPITALE	LATERAL BENDING AND ROTATION OF THE HEAD, EXTENTION OF HEAD AND NECK	
SPLENIUS CERVICIS	PROCESSUS SPINOSUS TIII-TVI	PROCESSUS TRANSVERSUS CII-CIII		
TABLE OF MM. SUBOCCIPITALE				
RECTUS CAPITIS POSTERIOR MAJOR ET MINOR, OBLIQUUS CAPITIS SUPERIOR ET INFERIOR	OCCIPUT, CI-CII	EXTENTION AND ROTATION OF THE HEAD (STABILISATION AND MINOR ADJUSTMENTS OF HEAD POSITION)	RAMUS POSTERIOR C1	AA. VERTEBRALES ET SUB OCCIPITALIS

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ABBREVIATIONS

ABBREVIATION USED IN THIS BOOK:

A· = ARTERIA/ ARTERY (AA·= ARTERIES)

V· = VENA/ VEIN (VV·= VEINS)

M· = MUSCULUS/ MUSCLE (MM·= MUSCULI/ MUSCLES)

LIG· = LIGAMENTUM/ LIGAMENT

N· = NERVES/ NERVE (NN= NERVI/ NERVES)

CN = NERVES CRANIALIS/ CRANIAL NERVE

C = CERVICAL

T = THORACICA

L = LUMBAR

S = SACRAL

CO = COCCYGIS

GLOSSARY

ADITUS	: OPENING OR ENTRANCE
AFFERENT	: CONVEYING TOWARD A CENTER
ALA	: WINGLIKE PROCESS
ANGULUS (ANGLE)	: THE POINT AT WHICH TWO INTERSECTING BORDERS OR SURFACES CONVERGE
ANNULUS (RING)	: A SMALL RING OR ENCIRCLING STRUCTURE
ANSA	: LOOPLIKE STRUCTURE
ANTERIOR	: SITUATED AT OR DIRECTED TOWARD THE FRONT
APERTURA (APERTURE)	: OPENING
APEX	: POINTED END OF A CONE-SHAPED PART
ARCUATE	: BENT LIKE A BOW
ARCUS (ARCH)	: A STRUCTURE OF BOWLIKE OR CURVED OUTLINE
ARTERIA (ARTERY)	: A VESSEL THROUGH WHICH THE BLOOD PASSES AWAY FROM THE HEART TO VARIOUS PARTS OF THE BODY
ARTICULAR	: PERTAINING TO A JOINT
AURICULA (AURICLE)	: A PROJECTING PART OF THE EAR LYING OUTSIDE THE HEAD 2· THE EAR-SHAPED APPENDAGE OF EITHER ATRIUM OF THE HEART
AXILLA	: THE PYRAMID REGION BETWEEN THE UPPER THORACIC WALL AND THE UPPER LIMB
BASIS	: THE LOWER, BASIC, OR FUNDAMENTAL PART OF AN OBJECT, ORGAN, OR SUBSTANCE
BICEPS	: A MUSCLE HAVING TWO HEADS
BRACHIAL	: PERTAINING TO THE UPPER LIMB
CANALIS	: CANAL OR CHANNEL
CAPUT (HEAD)	: EXPANDED OR CHIEF EXTREMITY OF AN ORGAN OR PART; THE PART OF THE BODY CONTAINING THE BRAIN AND THE ORGANS OF SPECIAL SENSE
CAVITAS (CAVITY)	: A HOLLOW OR SPACE, OR A POTENTIAL SPACE, WITHIN THE BODY OR ONE OF ITS ORGANS
CILIA	: THE EYELIDS OR THEIR OUTER EDGE
COLLATERAL	: 1· SECONDARY OR ACCESSORY, NOT DIRECT OR IMMEDIATE; 2· A SMALL SIDE BRANCH, AS OF A BLOOD VESSEL OR NERVE
COLLUM	: NECKLIKE PART
COMMISURA (COMMISSURE)	: A SITE OF UNION CORRESPONDING PARTS, SUCH AS THE ANGLE OF THE LIPS OR EYELIDS

CONDYLUS (CONDYLE)	: A ROUNDED PROJECTION OF A BONE, USUALLY FOR ARTICULATION WITH ANOTHER BONE
CORPUS	: BODY
CORTEX	: OUTER LAYER OF AN ORGAN OR OTHER STRUCTURE
COSTA	: RIB
CRIBIFORM	: PERFORATED LIKE A SIEVE
CRISTA (CREST)	: A PROJECTION, OR PROJECTING STRUCTURE OR RIDGE, ESPECIALLY ONE SURMOUNTING A BONE OR ITS BORDER
CUTANEUS (CUTANEOUS)	: PERTAINING TO THE SKIN
DECUSSATIO (DECUSSATION)	: A CROSSING OVER; THE INTERCROSSING OF FELLOW PARTS OR STRUCTURES IN THE FORM OF AN X
DEPRESSOR	: ANYTHING THAT DEPRESSES, SUCH AS A MUSCLE, AGENT, OR INSTRUMENT
DEXTER	: RIGHT
DORSAL	: DIRECTED TOWARD OR SITUATED ON THE BACK SURFACE
DUCTUS (DUCT)	: A PASSAGE WITH WELL-DEFINED WALLS, ESPECIALLY A TUBULAR STRUCTURE FOR THE PASSAGE OF EXCRETIONS OR SECRETIONS
EFFERENT	: CONDUCTING OR PROGRESSING AWAY FROM A CENTER OR SPECIFIC SITE OF REFERENCE
EPINCONDYLUS (EPICONDYLE)	: AN EMINENCE UPON A BONE, ABOVE ITS CONDYLE
ERECTOR	: A STRUCTURE THAT ERECTS, AS A MUSCLE THAT HOLDS UP OR RAISES PART
ET	: AND
EXTENSOR	: A MUSCLE THAT STRAIGHTENS A JOINT
EXTERNUS	: EXTERNAL; DENOTING A STRUCTURE FARTHER FROM THE CENTER OF AN ORGAN OR CAVITY
FACIES	: A SPECIFIC SURFACE OF A BODY STRUCTURE, PART, OR ORGAN
FASCIA	: A SHEET OR BAND OF FIBROUS TISSUE SUCH AS LIES DEEP TO THE SKIN OR INVESTS MUSCLES AND VARIOUS BODY ORGANS
FIBROSIS	: FORMATION OF FIBROUS TISSUE
FISSURA (FISSURE)	: A NARROW SLIT OR CLEFT
FLEXOR	: A MUSCLE THAT FLEXES A JOINT
FORAMEN	: NATURAL OPENING OR PASSAGE
FORNIX	: STRUCTURE SHAPED LIKE AN ARCH

FOSSA	: HOLLOW OR DEPRESSED AREA
FOVEA	: SMALL PIT OR DEPRESSION
FUNICULUS (CORD)	: A CORDLIKE STRUCTURE OR PART
GANGLION	: A GROUP OF NERVE CELL BODIES LOCATED OUTSIDE THE CENTRAL NERVOUS SYSTEM
GLANDULA (GLAND)	: AN AGGREGATION OF CELLS SPECIALIZED TO SECRETE OR EXCRETE MATERIALS NOT RELATED TO THEIR ORDINARY METABOLIC NEEDS
GYRUS	: ONE OF THE MANY CONVOLUTIONS OF THE SURFACE OF THE CEREBRAL HEMISPHERES CAUSED BY INFOLDING OF THE CORTEX
HALLUX	: THE GREAT TOE
HEMISPHERE	: HALF OF SPHERICAL OR ROUGHLY SPHERICAL STRUCTURE OR ORGAN
HIATUS	: OPENING, GAP, OR CLEFT
HILUM	: A DEPRESSION OR PIT AT THE PART OF AN ORAN WHERE VESSELS AND NERVES ENTER
IMPINGEMENT	: ADVANCEMENT OF ONE THING OUT OF ITS EXPECTED PLACE TO WHERE IT MAY COLLIDE WITH SOMETHING ELSE
IMPRESSIO (IMPRESSION)	: A SLIGHT INDENTATION OR DEPRESSION, AS ONE PRODUCED IN THE SURFACE OF ONE ORGAN BY PRESSURE EXERTED BY ANOTHER
INCISURA (NOTCH)	: AN INDENTATION, ESPECIALLY ONE ON THE EDGE OF A BONE OR OTHER ORGAN
INFLAMMATION	: A LOCALIZED PROTECTIVE RESPONSE ELICITED BY INJURY OR DESTRUCTION OF TISSUES
INTERCONDYLARE	: BETWEEN TWO CONDYLES
INTERMEDIUS (INTERMEDIATE)	: A STRUCTURE LYING BETWEEN A LATERAL AND A MEDIAL STRUCTURE
INTERNUS	: INTERNAL; STRUCTURE THAT IS NEARER TO THE CENTRE OF AN ORGAN OR PART THAT ANOTHER ONE IS
INTEROSSEOUS	: BETWEEN TWO BONES
INTERVENTRICULAR	: BETWEEN THE VENTRICLES OF THE HEART
INTIMA	: INNERMOST
INTRAPERITONEUM	: WITHIN THE PERITONEAL CAVITY
ISTHMUS	: A NARROW CONNECTION BETWEEN TWO LARGER BODIES OR PART
JOINT	: THE SITE OF JUNCTION OR UNION OF TWO OR MORE BONES OF THE BODY
JUGULAR (CERVICAL)	: PERTAINING TO THE NECK

LABIUM (LIP)	: 1· UPPER OR LOWER FLESHY MARGIN OF THE MOUTH 2· ANY LIPLIKE PART
LAMINA	: A THIN, FLAT PLATE OR STRATUM OF A COMPOSITE STRUCTURE
LATERAL	: DENOTING A POSITION FARTHER FROM THE MEDIAN PLANE OR MIDLINE OF THE BODY OR A STRUCTURE
LEVATOR	: A MUSCLE THAT ELEVATES AN ORGAN OR STRUCTURE
LIGAMENTUM (LIGAMENT)	: A BAND OF FIBROUS TISSUE CONNECTING BONES OR CARTILAGES, SERVING TO SUPPORT AND STRENGTHEN JOINTS
LINEA (LINE)	: A STRIPE, STREAK, OR NARROW RIDGE
LONGUS	: LONG
LYMPH NODE	: ANY OF THE ACCUMULATIONS OF LYMPHOID TISSUE ORGANIZED AS DEFINITE LYMPHOID ORGANS ALONG THE COURSE OF LYMPHATIC VESSELS
MALLEOLUS	: EITHER OF THE TWO ROUNDED PROMINENCES ON EITHER SIDE OF THE ANGLE JOINT
MARGO (MARGIN)	: AN EDGE OR BORDER
MEATUS	: AN OPENING OR PASSAGE, ESPECIALLY ONE LEADING TO BODY SURFACE
MEDIAL	: PERTAINING TO OR SITUATED TOWARD THE MIDLINE
MEDULLA	: THE INNERMOST PART OF A STRUCTURE OR ORGAN
MUSCULUS (MUSCLE)	: PL· MUSCULI; A BUNDLE OF LONG SLENDER CELLS (MUSCLE FIBERS) HAVING THE POWER TO CONTRACT AND HENCE TO PRODUCE MOVEMENT
NASAL	: PERTAINING TO THE NOSE
NERVUS (NERVE)	: PL· NERVI A CORDLIKE STRUCTURE OF THE BODY, CONSISTING OF A COLLECTION OF NERVE FIBERS THAT CONVEY IMPULSES BETWEEN A PART OF THE CENTRAL NERVOUS SYSTEM AND A REGION OF THE BODY
NUCLEUS	: A MASS OF GRAY MATTER IN THE CENTRAL NERVOUS SYSTEM
OBLIQUE	: SLANTING; INCLINED
OBTURATOR	: A DISK OR PLATE THAT CLOSES AN OPENING

ORIFICIUM (ORIFICE)	: THE ENTRANCE OR OUTLET OF ANY BODY CAVITY
OSSIFICATION	: FORMATION OF OR CONVERSION INTO BONE OR A BONY SUBSTANCE
OSTEOLOGY	: SCIENTIFIC STUDY OF THE BONES
OSTIUM	: OPENING OR ORIFICE
PALPEBRAE	: EYELID
PARS (PART)	: A DIVISION OF A LARGER STRUCTURE
PES	: FOOT OR ANY FOOTLIKE PART
PIRIFORM	: PEAR-SHAPED
PLEXUS	: A NETWORK OR TANGLE, CHIEFLY OF VEINS OR NERVES
PLICA	: A RIDGE OR FOLD ON SOME BODY STRUCTURE
POLLUX	: THE THUMB
POPLITEAL	: PERTAINING TO THE AREA BEHIND THE KNEE
POSTERIOR	: DIRECTED TOWARD OR SITUATED AT THE BACK
POSTSYNAPTIC	: DISTAL TO OR OCCURRING BEYOND A SYNAPSE
PRESYNAPTIC	: SITUATED OR OCCURRING PROXIMAL TO A SYNAPSE
PROCESSUS (PROCESS)	: A PROMINENCE OR PROJECTION, AS FROM A BONE
PROFUNDUS	: DEEP
PRONATOR	: A MUSCLE THAT PRONATES
PUNCTUM	: A POINT OR SMALL SPOT
QUADRANGULARE	: HAVING FOUR ANGLES
RADIX (ROOT)	: THAT PORTION OF AN ORGAN, THAT IS BURIED IN THE TISSUE, OR BY WHICH IT ARISES FROM ANOTHER STRUCTURE
RAMUS (BRANCH)	: A DIVISION OR OFFSHOOT FROM A MAIN STEM
RECTUS	: STRAIGHT
RECURRENT	: RETURNING AFTER A REMISSION
RETROPERITONEUM	: BEHIND THE PERITONEUM
RHOMBOID	: SHAPED LIKE A RECTANGLE THAT HAS BEEN SKEWED TO ONE SIDE SO THAT THE ANGLES ARE OBLIQUE
SEMILUNAR	: SHAPED LIKE A HALF-MOON OR CRESCENT
SEPTUM	: A WALL OR PARTITION DIVIDING A BODY SPACE OR CAVITY
SIGMOID	: SHAPED LIKE THE LETTER C OR S
SINISTER	: LEFT

SINUS	: A RECESS, CAVITY, OR CHANNEL, SUCH AS ONE IN BONE OR A DILATED CHANNEL FOR VENOUS BLOOD
SPASM	: A SUDDEN INVOLUNTARY CONTRACTION OF A MUSCLE OR GROUP OF MUSCLE
SPATIUM (SPACE)	: AN ACTUAL OR POTENTIAL CAVITY OF THE BODY
SPHINCTER	: A CIRCULAR MUSCLE THAT CONSTRICTS A PASSAGE OR CLOSES A NATURAL ORIFICE
SPINA (SPINE)	: A THORNLIKE PROCESS OR PROJECTION
STERNAL	: PERTAINING TO THE STERNUM
STYLOID	: LONG AND POINTED, LIKE A PEN OR STYLUS
SULCUS	: LONG GROOVE OR FURROW
SUPERFICIAL	: SITUATED ON OR NEAR THE SURFACE
SUPERIOR	: SITUATED ABOVE, OR DIRECTED UPWARD
SUPINATOR	: A MUSCLE THAT SUPINATES THE ARM
SUSTENTACULUM	: SUPPORT
TENDINITIS	: INFLAMMATION OF TENDONS AND OF TENDON-MUSCLE ATTACHMENT
TENDON	: A CORD OR BAND OF STRONG WHITE FIBROUS TISSUE THAT CONNECTS A MUSCLE TO A BONE
TERES	: ROUND
TRANSVERSALIS (TRANSVERSE)	: EXTENDING FROM SIDE TO SIDE; SITUATED AT RIGHT ANGLES TO THE LONG AXIS
TRICEPS	: A MUSCLE HAVING THREE HEADS
TRIGONUM	: TRIANGLE
TRUNCUS (TRUNK)	: THE PART OF THE BODY TO WHICH THE HEAD AND LIMBS ARE ATTACHED; A LARGER STRUCTURE, SUCH AS A VESSEL OR NERVE FROM WHICH SMALLER DIVISIONS OR BRANCHES ARISE, OR THAT IS CREATED BY THEIR UNION
TUBER	: A SWELLING OR PROTUBERANCE
TUBERCULUM (TUBERCLE)	: A NODULE OR SMALL EMINENCE, ESPECIALLY ONE ON A BONE, FOR ATTACHMENT OF A TENDON
TUBEROSITAS (TUBEROSITY)	: AN ELEVATION OR PROTUBERANCE, ESPECIALLY ONE ON A BONE WHERE A MUSCLE IS ATTACHED
VENA (VEIN)	: A VESSEL THROUGH WHICH BLOOD PASSES FROM VARIOUS ORGANS OR PARTS BACK TO THE HEART
VENTRAL	: DIRECTED TOWARD OR SITUATED ON THE BELLY SURFACE
VERMIFORM	: WORMLIKE IN SHAPE OR APPEARANCE

VESTIBULUM (VESTIBULE) : A SPACE OR CAVITY AT THE ENTRANCE TO ANOTHER STRUCTURE

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