

Introduction..... Anatomical Terms and Conventions

Medical Gross Anatomy
AJ Weinhaus




UNIVERSITY OF MINNESOTA

MS I – Student Evaluations.. End of Fall semester , 2011.


“ALSO it would be extremely helpful if one of the anatomy professors made a new lecture that just went over common latin words used in anatomy. For example, foramen=hole. I think if you made a mandatory lecture that you gave to med students before starting anatomy and then let them keep the movie and remind them how good a reference this will be, it would have made learning these names a lot less stressful and challenging..”

 UNIVERSITY OF MINNESOTA

Anatomical Terms and Conventions

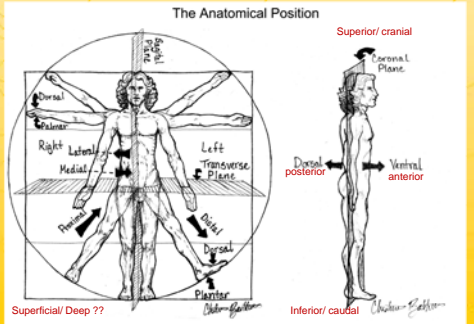
- Anatomical Position
- Directions
- Conventions in the Skeletal system
- Conventions in the Muscular system
- Common Prefixes and Suffixes in Anatomy
- Introduction to the Nervous System
- Introduction to the Cardiovascular system

...approx. a 30 minute presentation

 UNIVERSITY OF MINNESOTA

The Anatomical Position

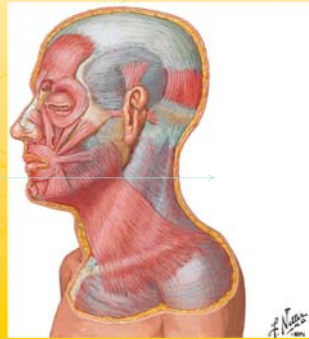
A point of reference
 No matter what position the patient is in,
 assume standing-up in Anatomical position



Anterior/Ventral vs. Posterior/Dorsal

- Anterior/Ventral - towards the front.
- Posterior/Dorsal - towards the back.

Anterior
 Posterior
 Ventral
 Dorsal



Superior/Cranial vs. Inferior/Caudal

- Superior/Cranial - towards the cranium.
- Inferior/Caudal - towards the feet.

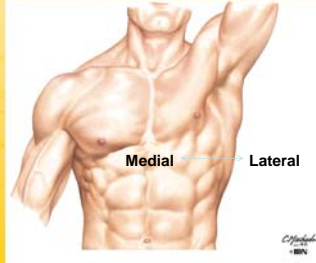
Superior/
 Cranial



Inferior/
 Caudal

Lateral vs. Medial

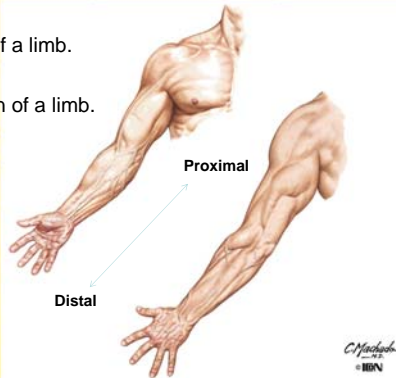
- Medial - towards the midline.
- Lateral - away from the midline.



UNIVERSITY OF MINNESOTA

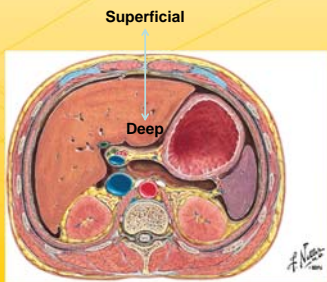
Proximal vs. Distal

- Proximal – towards the origin of a limb.
- Distal – away from the origin of a limb.



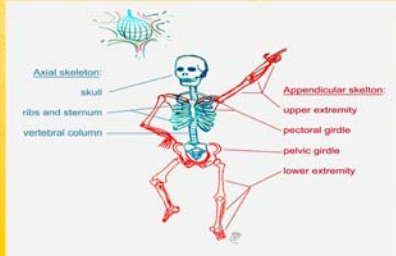
Superficial/Deep

- Superficial - towards the outside.
- Deep - towards the inside.



Skeletal System

- Axial Skeleton
 - Along the Axis or Midline bones and the ribs
- Appendicular Skeleton
 - Appendages, including the shoulder and pelvic girdles



Divisions of the Appendicular Skeleton

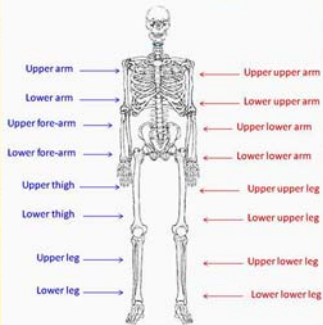
Some of the anatomy that you currently know may be incorrect.

Note that the lower arm is proximal to the elbow.

Note that no part of the leg is located above the knee.

The thigh is proximal to the knee and the leg is distal to the knee.

Which is more logical ?



"But Professor, everyone knows"

Bone terms:

✓ We will learn to identify muscles by their bony attachments.

A muscle extends from an attachment on one bone - to an attachment on another.

✓ Joints are formed from bony projections.

✓ Arteries, veins, and nerves can travel in various holes through bones.

Projections that are attachment points of muscles and ligaments:

- tubercle - small rounded projection or process
- tuberosity - a large rounded elevation
 - note: L. Tuber ("a swelling"). I.e. tuber can mean "potato" in English.
- crest - narrow ridge of bone, usually prominent
- line - a narrow ridge of bone, smaller than a crest
- trochanter - a large bump on femur
- epicondyle ("upon the condyle") - raised area above the articular surface
- spine - a sharp or pointed projection
- process - a rounded projection

Bony projections that help to form joints:

- ramus ("a branch") - less slender than a process, often forms an angle to the main body
- malleolus ("little mallet or hammer") - found on tibia and fibula
- condyle ("a knuckle") - a rounded articular surface
- head - a projection from a more narrow neck of a bone
- facet - a flat articular surface

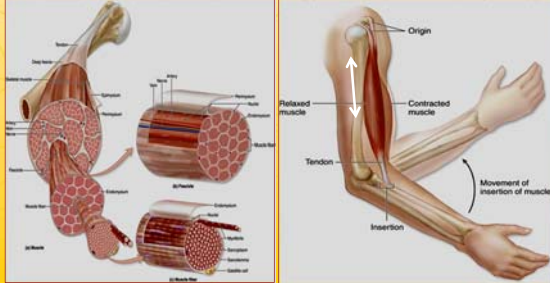
Openings into or through bone:

- sinus - a hollow, curve, or channel
- foramen - an aperture or perforation
- meatus - a passage or channel
- canal - a duct or channel
- fissure - a cleft, sulcus, or slit



Muscles can only contract linearly.

A muscle will move two bones closer together



Muscles

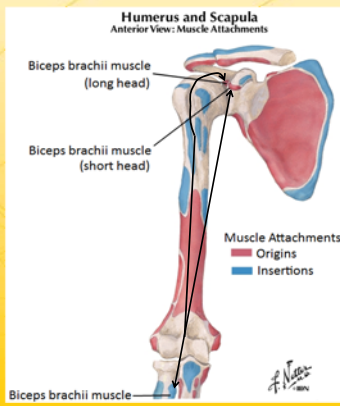
SKELETAL ATTACHMENTS:

- Origin
 - Axial skeleton
 - Anchoring point
 - doesn't move
 - Proximal
- Insertion
 - Appendicular skeleton
 - mobile bone



Muscles...and their SKELETAL ATTACHMENTS:

- Origin
 - Axial skeleton
 - Anchoring point
 - doesn't move
 - Proximal
- Insertion
 - Appendicular skeleton
 - mobile bone



Compound Terms

- Prefixes
- Suffixes
- Relative Terms
 - An example:
 - *Epidermis*: “*Upon* the Dermis”
 - Dermis
 - *Hypodermis*: “*Below* the Dermis”



Common Prefixes

Prefix	Meaning
Bi-/Di-	Two
Tri-	Three
Quad-	Four
Epi-/Hyper-/Supra-/Super-	Upon or Above
Hypo-/Infra-/Sub-	Below
Intra-	Inside
Extra-	Outside



Prefixes and Suffixes:

Common roots are helpful to deduce the meaning of structures:
(this list is for example, not comprehensive)

- | | |
|-----------------------------------------------|------------------------------------------------------------------|
| A- without – azygos, not paired | Circum – around – circumflex, bend around |
| Ab – away from – abduct, take away | Clavi or cleido – clavicle |
| Ad- toward – adduct, move towards | Costo – rib – intercostal, between ribs |
| Arthro – joint – arthroscopy, viewing a joint | Cyst – a bladder or cyst – cystic artery, artery to gall bladder |
| Aff – toward – afferent, towards spinal cord | Cune – wedge – cuneiform, a wedged shaped bone |
| Albi – white – linea alba, white line | Demi – half – demifacet, half a facet |
| Axilla – arm pit | Dur – durable – dura mater |
| Bi- two – biceps brachii, two-headed | Eff – away, out – efferent, away from spinal cord |
| Brachi – arm – biceps brachii, of the arm | Endo – within – endocardium, inner lining of heart |
| broncho | Epi – upon – epicardium, lining on the heart |
| Calvaria – bald part of cranium | |
| Calvariae – plural of calvaria | |



Prefixes and Suffixes:

Common roots are helpful to deduce the meaning of structures:
(this list are examples, not comprehensive)

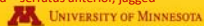
- form – resembling – fusiform, spindle-shaped
- Gastro – stomach – gastric artery
- Glosso – tongue – hypoglossal, under the tongue
- Hepato – liver – hepatic duct
- Hypo – beneath – hypodermis
- Infra – below – infraspinatus, below spine of scapula
- issimus – greatest – latissimus, widest of the back
- Labi – lip – labrum, lip shaped cartilage
- Mast – mamm, - breast – mastoid process, shaped like a breast
- Medial – towards the middle
- Median – down the middle, think of the median of the hiway
- Meningio – membrane around brain or spinal cord, meninges – dura, pia and arachnoid mater
- Myo- muscle – myometrium, muscle of the heart
- Oculo-, ophthalm- – eye – oculomotor, ophthalmic artery
- Odonto – tooth (also dens) – odontoid process, shaped like a tooth



Prefixes and Suffixes:

Common roots are helpful to deduce the meaning of structures:
(this list are examples, not comprehensive)

- Osteo – bone- osteology, study of bones
- Oto – ear – parotid, near the ear
- Palmar – palm of foot or hand
- Para – near
- Pecto – chest – Pectoralis major, large muscle of chest
- Peri- around – perirenal fat
- Pes, ped, pod – foot – dorsalis pedis, artery to dorsum of foot
- Phag – eat – esophagus, through which to eat
- Plantar – sole of foot
- Pneumo - pulmo – air – pulmonary artery
- Post – after – post-ganglionic, after the ganglion
- Pre – before – pre-ganglionic, before the ganglion
- Quad – four – quadriceps femoris, 4-headed muscle of thigh
- Ramus – branch – primary division of a nerve
- Recto – straight – rectus femoris, straight muscle of the thigh
- Reno – kidney – adrenal gland, above the kidney
- Retro – behind – retropubic space, behind pubic bone
- Salpingo – shaped like a trumpet
- Stomato – shaped like a mouth
- Semi – half – semitendinosus – half tendinous muscle
- Serrate – serrated – serratus anterior, jagged



Prefixes and Suffixes:

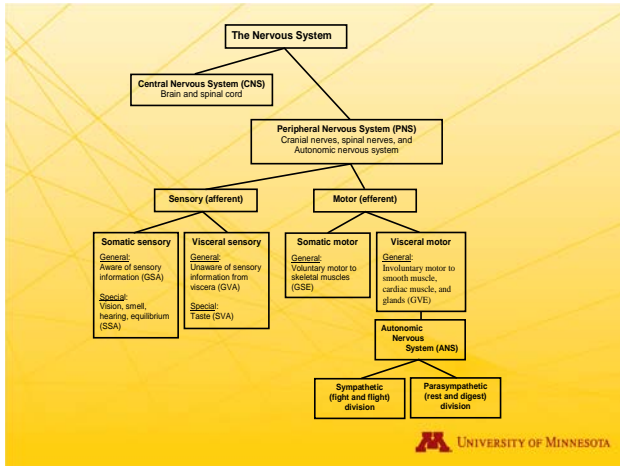
Common roots are helpful to deduce the meaning of structures:
(this list are examples, not comprehensive)

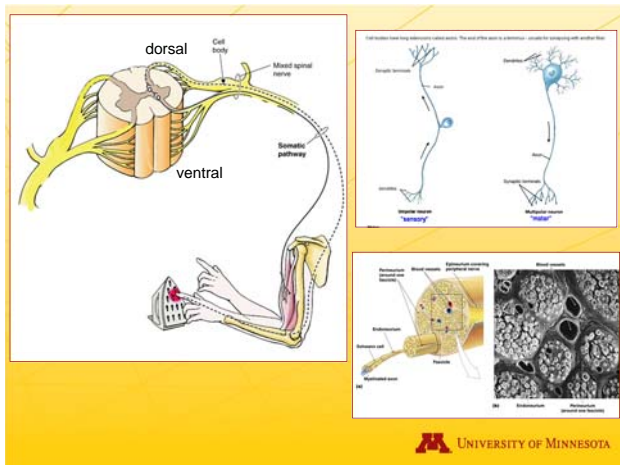
- Sterno – sternum – sternoclavicular joint
- Sub – under – subscapularis, a muscle under the scapula
- Supra – super – above – supraclavicular, above clavicle
- Sym, syn – together – pubic symphysis is where pubic bones meet
- Thorac- thorax – cervicothoracic ganglion
- tomy – to cut – appendectomy, remove vermiform appendix
- Trans – cross – transverse cervical, across the neck
- Tri – three – triceps coxae, three-headed muscle of hip
- Tunica- layer or coat – tunica media, the middle layer

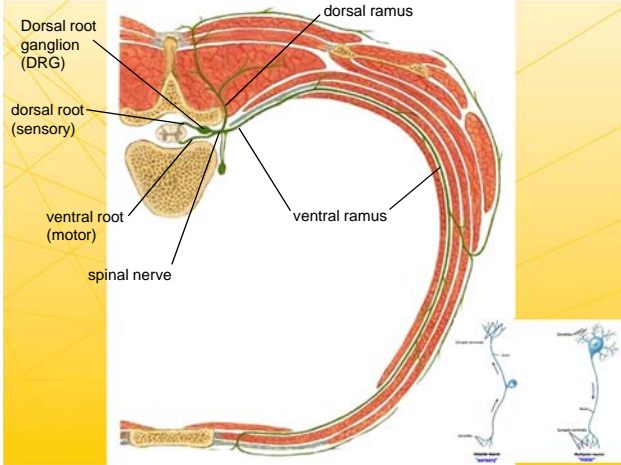


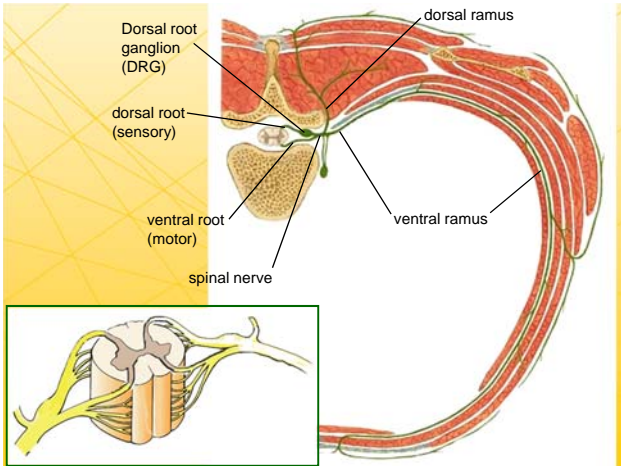
Introduction to Nerves.....



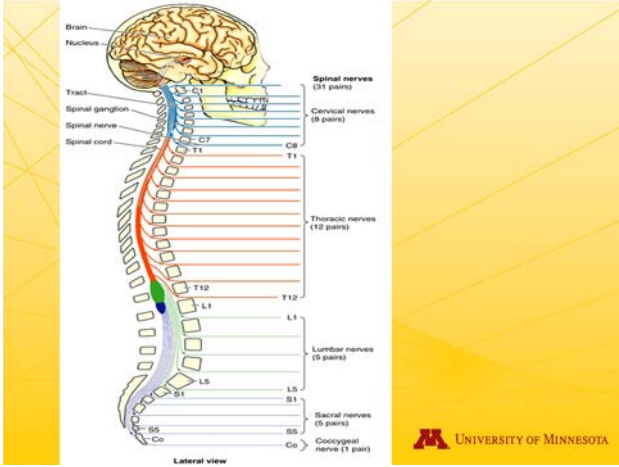


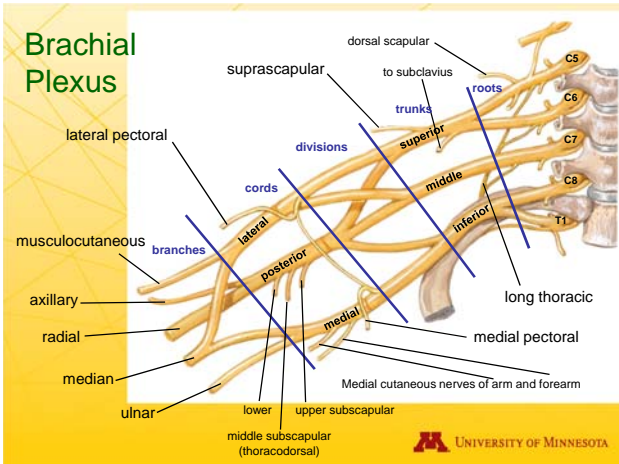


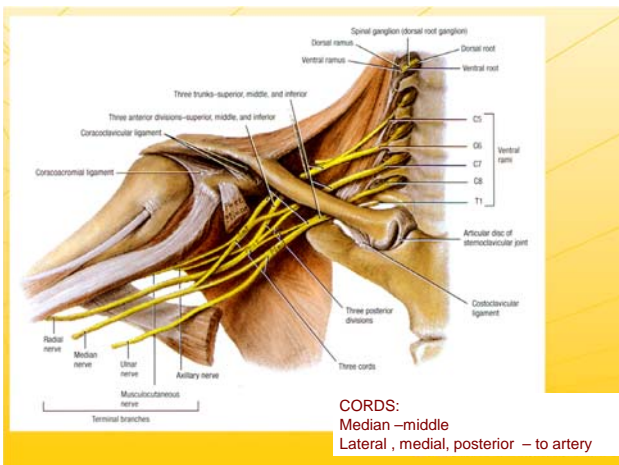












CORDS:
 Median –middle
 Lateral , medial, posterior – to artery

That's it for now !

Thank you for your attention.

Don't forget.

Your faculty and TAs are here to help you learn anatomy - to be the best physician you can be !