The A to Z of Surface Anatomy

Dr A. L. Neill
BSc MSc MBBS PhD FACBS
The A to Z of Surface Anatomy

Introduction

This book describes the structures which lie beneath the skin which involves a recognition of the surface curves of most skeletal muscles. It ties in well with the A to Z of Skeletal Muscles, and of course the A to Z of the Hair, Nails and Skin, but all the A to Zs are cross-referenced and together are forming a set covering the all structural elements of the human body. Recently pathology as well as anatomy has been tackled by the A to Zs with The A to Z of Bone & Joint Failure the first book to cover the breakdown of the body’s structures in this manner, expanding upon the knowledge of the A to Z of Bones, Joints, Ligaments and the Back.

Artists have used studied anatomy and surface anatomy to help in their creations – paintings, sculpture etc and it is important in Emergency Medicine to be able to SEE inside the body in a 3 dimensional manner.

If there is a structure/subject you want to see in the A to Zs let us know. anatomy.update@gmail.com

We have 2 websites and there maybe others where you can view all images of the A to Zs and any additional material please feel free to examine the new books which may be placed here and to give any suggestions after all it was due to the overwhelming number of requests for this title that this book was written placed: http://www.aspenpharma.com.au/atlas/student.htm
www.amandasatoz.com

Acknowledgement

Thank you Aspenpharmacare Australia for your support and assistance in this valuable project, particularly Mr. Greg Lan, and Rob Koster. Thank you to all those who have helped when I have been rushed to finish and have made time for this project, and have faith in it, in particular Ante Mihaljevic and Phill Ryman. Thank you everyone who has provided valuable feedback and help in many ways; Richard, Peter, Robbie, Jody, Quentin and there are others too, thank you.

Dedication

To those who read and use these books and find them helpful.
How to use this book

The structure of the A to Zs grows and develops with each new book while the principle of listing structures in an alphabetical is maintained. Basic anatomical concepts are placed in the beginning of this book; then measurements and proportions of the body. The role of the Common Terms section is enlarged, illustrated and colour coded.

In this book the images are alphabetical whether they can be seen or not – i.e. the heart cannot be seen but its projection are indicated on the chest – but the tendons of the wrist can be visualized. All structures and regions are listed alphabetically. All entries are cross referenced in the usual manner i.e. see for go to and also see for additional images listed under that heading.

Thank you

A.L. Neill
BSc MSc MBBS PhD FACS
medicalamanda@gmail
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# The A to Z of Surface Anatomy

**Back**  
lower  
upper *see Chest*  

**Belly** *see Abdomen*  

**Belly button** *see Abdomen*  

**Bladder** *see Kidneys, Pelvis, Uterus*  

**Breast** *see also Axilla*  
arterial  
lymphatic & venous  

**Buttock** *see Gluteum*  

**Caecum** *see Abdomen GIT*  

**Carpal tunnel** *see Hand*  

**Chest Wall** *see also Abdomen, Lungs*  
great vessels  
heart  
heart valves sounds  
incision or marks = scars  
lungs & pleura  

**Cubital Fossa**  

**Diaphragm + assoc structures** *see also Oesophagus*  

**Duodenum** *see Abdomen GIT Kidneys*  

**Ear**  

**Elbow** see arm, cubital fossa, forearm  

**Eye**  

**Face**  
arteries  
bones *see also TMJ*  
Facial N  
muscles  
veins  

**Femoral triangle**  
contents & borders  
muscles & bones  

**Finger** *see Hand*  

**Flexor Retinaculum** *see Hand*  

**Foot**  
dorsum  
bones  
tendons  
sole  
fascia / muscle layers  
bones / dermatomes  

**Forearm**  
bones  
muscles  

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The A to Z of Surface Anatomy

Gall Bladder see Abdomen GIT, Diaphragm

Genitalia –
  female
  male see Penis Testis

Gluteum / Gluteal region
  bones
  muscles / Sciatic N

Hand see also grips
  bones
  dorsum extensors
  palm
  features
  flexors
  flexor retinaculum
  thenar/ hypothenar eminences

Head see Face, Neck, Temporomandibular joint

Heart see also Chest, Oesophagus

Hip see also Gluteum

Hyoid see Neck, Thyroid

Inguinal nodes superficial

Kidneys see also Back

Knee see also lower leg, popliteal fossa, Thigh

Large Intestine see Abdomen GIT

Leg / Lower leg
  muscles and bones

Liver see Abdomen non-GIT, Diaphragm

Lungs see also Abdomen, Chest

Lymph nodes see Axilla, Breast, Inguinal, Mouth, Neck

Mouth
  salivary glands
  tonsil & uvula

Nail

Neck
  BVs & access points
  LNs and veins
  submandibular regions
  triangles

Nipples see Breast

Nose

Oesophagus

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Abbreviations

A = atrium, (pl atria) / actions
    / movements of a joint
a = artery
abdo = abdomen / abdominal
ACF = anterior cranial fossa
adj. = adjective
AlIS = anterior inferior iliac spine
aka = also known as
alt. = alternative
AM = arachnoid mater
ANS = autonomic nervous system
ant = anterior
art. = artery
AS = Alternative Spelling, generally
     referring to the diff. b/n British
     & American spelling
ASIS = anterior superior iliac spine
assoc. = associated with
AV = atrioventricular
B = blood
BBB = blood brain barrier
bc = because
BF = blood flow
BM = basement membrane
b/n = between
BP = brachial plexus
bpm = beats per minute
br = branch (of a vessel)
BS = blood supply / blood stream
BV = blood vessel(s)
cap. = capillary
c.f. = compared to
C = carpal
C = cervical
CC = costal border
CC = costal cartilage
CH = cerebral hemispheres
cm = cell membrane
CNS = central nervous system
collat. = collateral
CP = cervical plexus
Cr = cranial
CSF = Cerebrospinal fluid
CT = connective tissue
CVA = cerebrovascular accident
     = stroke
defn = definition
diff. = difference(s)
dist. = distal
DM = dura mater
DVT = deep vein thrombosis
EAM = external auditory meatus
e.g. = example
EC = extracellular (outside the cell)
ECG = electrocardiogram
ED = extensor digitorum
ER = Extensor Retinaculum
FDP = Flexor digitorum profundus
FDS = Flexor digitorum superficialis
FPB = Flexor pollicus brevis
FPL = Flexor pollicus longus
FR = Flexor Retinaculum
Gk. = Greek
H = hormone(s)
H = hypochondrium
HB = heart beat
HF = heart failure
HR = heart rate
HS = heart sounds
IC = intercostal
IC = intercarpal
ICS = intercostal space
IP = interphalangeal
Ix = investigation
IVC = inferior vena cava
jt(s) = joints = articulations
L = left
L = lumbar
LA = Left Atrium
lat. = lateral
LH = left hypochondrium
LL = lower limb
LIF = left iliac fossa
lig = ligament
Lt. = Latin
m = muscle
MC = metacarpal
MCF = middle cranial fossa
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>MCL</td>
<td>mid clavicular line</td>
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<tr>
<td>MCP</td>
<td>metacarpophalangeal</td>
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<tr>
<td>med.</td>
<td>medial</td>
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<td>MI</td>
<td>myocardial infarction</td>
</tr>
<tr>
<td>MIP</td>
<td>midinguinal point</td>
</tr>
<tr>
<td>MT</td>
<td>metatarsal</td>
</tr>
<tr>
<td>N</td>
<td>nerve</td>
</tr>
<tr>
<td>NAD</td>
<td>normal (size, shape)</td>
</tr>
<tr>
<td>NAD</td>
<td>no abnormality detected</td>
</tr>
<tr>
<td>NR</td>
<td>nerve root</td>
</tr>
<tr>
<td>NS</td>
<td>nervous system/nerve supply</td>
</tr>
<tr>
<td>NT</td>
<td>nervous tissue</td>
</tr>
<tr>
<td>nv</td>
<td>neurovascular bundle</td>
</tr>
<tr>
<td>P</td>
<td>pressure</td>
</tr>
<tr>
<td>PAD</td>
<td>peripheral artery disease</td>
</tr>
<tr>
<td>PaNS</td>
<td>parasympathetic nervous system</td>
</tr>
<tr>
<td>Ph</td>
<td>phalanges</td>
</tr>
<tr>
<td>PIIS</td>
<td>posterior inferior iliac spine</td>
</tr>
<tr>
<td>pl.</td>
<td>plural</td>
</tr>
<tr>
<td>PM</td>
<td>pia mater</td>
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<tr>
<td>PN</td>
<td>peripheral nerve</td>
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<tr>
<td>post.</td>
<td>posterior</td>
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<tr>
<td>proc.</td>
<td>process</td>
</tr>
<tr>
<td>prox.</td>
<td>proximal</td>
</tr>
<tr>
<td>PS</td>
<td>pubic symphysis</td>
</tr>
<tr>
<td>PSIS</td>
<td>posterior superior iliac spine</td>
</tr>
<tr>
<td>R</td>
<td>right</td>
</tr>
<tr>
<td>RA</td>
<td>right atrium</td>
</tr>
<tr>
<td>RH</td>
<td>right hypochondrium</td>
</tr>
<tr>
<td>RIF</td>
<td>Right Iliac Fossa</td>
</tr>
<tr>
<td>S</td>
<td>sacral</td>
</tr>
<tr>
<td>S1</td>
<td>first heart sound</td>
</tr>
<tr>
<td>S2</td>
<td>second heart sound</td>
</tr>
<tr>
<td>SA</td>
<td>sinoatrial</td>
</tr>
<tr>
<td>SCM</td>
<td>sternocleidomastoid muscle</td>
</tr>
<tr>
<td>sing.</td>
<td>singular</td>
</tr>
<tr>
<td>SC</td>
<td>spinal cord</td>
</tr>
<tr>
<td>SN</td>
<td>spinal nerve</td>
</tr>
<tr>
<td>SP</td>
<td>spinal process</td>
</tr>
<tr>
<td>SR</td>
<td>sarcoplastic reticulum</td>
</tr>
<tr>
<td>subcut.</td>
<td>subcutaneous</td>
</tr>
<tr>
<td>supf</td>
<td>superficial</td>
</tr>
</tbody>
</table>

SVC = superior vena cava
SyNS = sympathetic nervous system
T = thoracic
TMJ = temporomandibular joint
UL = upper limb, arm
V = vertebra
VC = vertebral column
WM = white matter
w/n = within
w/o = without
wrt = with respect to
& = and
∩ = intersection with
Common Terms used in Surface Anatomy

Ablation the removal of part of the body, generally a bony part, most commonly the teeth

Acromegaly a continuation of growth of the ends of cartilage covered bone (after fusion of the long bones) hence a gross change in the features (most noticeable in the jaw and digits) without growth in height, due mainly to the over activity of the pituitary gland

Ala a wing, hence a wing-like process as in the Ethmoid bone pl. - alae. Alveolus Air filled bone - tooth socket adj - alveolar (as in air filled bone in the maxilla)

Aneurysm a localized dilatation of an artery or heart chamber caused by disease or weakening of the muscle in the wall – tunica media.

Angina/Angina Pectoris chest pain or discomfort due to lack of oxygen - anoxia or ischemia in the muscle tissue (myocardium) generally bc of coronary artery disease. Angina is a symptom of a condition called myocardial ischemia; may also manifest as: aching, burning, discomfort, heaviness, numbness, pressure, tightness, and/or tingling in the chest, back, neck, throat, jaw or arms.

Angiography an X-ray that uses dye injected into arteries so that coronary artery anatomy can be studied wrt disease diagnosis.

Ankle bend = angle usually referring to the bend just above the foot, hence the ankle is the joint b/n the foot and the lower leg

Aorta the largest artery in the body and the primary BV leading from the heart to the body.

Aortic Valve the valve that regulates BF from the heart to the aorta.

Aperture an opening or space between bones or within a bone.

Apex (of the Heart) the inferior aspect or bottom of the heart 5th ICS, L MCL, where the HB is the strongest

Appendicular refers to the appendices of the axial i.e. in the skeleton, the limbs upper and lower which hang from the axial skeleton, this also includes the pectoral and pelvic girdles (not the Sacrum) adj. appendicular

Areola small, open spaces as in the areolar part of the Maxilla may lead or develop into sinuses. pl. areolae

Artery a BV that carries blood away from the heart.

Arth- to do with joints hence...

Articulation joint, description of the bone surfaces joining w/o the supporting structures = point of contact b/n 2 opposing bones hence the articulation of Humerus and Scapula is the articulation of the shoulder joint.

Auditory exostosis a bony growth on the walls of the EAM
Atrium
Lt antrum = waiting room – top chambers R & L of the heart - 1/3 of the volume of the Ventricles or lower chamber. Blood flows from the atria to the Ventricles.

Avulsion
forceable tearing away of a structure or part of a structure as in an avulsed fracture where a fragment bone is torn away from the main bone

Axis
of the body - is the central part - the line through the head & spine, the axial skeleton as opposed to the appendicular

Base - “of the Heart”
top of the heart located in the 4th ICS

Basilar
relating to the base or bottom of structures

Basiocranium
bones of the base of the skull

Boss
a smooth round broad eminence - mainly in the frontal bone female > male

Bregma
refers to a junction of more than 2 bones in a joint as in the Bregma of the skull, junction between the coronal and sagittal sutures which in the infant is not closed and can be felt pulsating – site of the anterior fontanelle.

Buccal
pertaining to the cheek

Calotte
consists of the Calvaria from which the base has been removed.

Calvaria
refers to the Cranium without the facial bones attached.

Canal
tunnel / extended foramen as in the carotid canal at the base of the skull adj canular (canicular - small canal)

Caput / Kaput
the head or of a head, adj. - capitate = having a head (c.f. decapitate)

Carotid
to put to sleep; compression of the common or internal carotid artery causes coma.

Carpo
wrist

Catheter
a thin, flexible tube

Cavity
an open area or sinus within a bone or formed by two or more bones (adj. cavernous), may be used interchangeably with fossa. Cavity tends to be more enclosed fossa a shallower bowl like space (Orbital fossa-Orbital cavity).

Cavum
a cave.

Cephalic
pertaining to the head

Cervico
pertaining to the neck

Concha
a shell shaped bone as in the ear or nose (pl. conchae adj. chonchoid) old term for this turbinate.

Condyle
a rounded enlargement or process possessing an articulating surface.

Cornu
a horn (as in the Hyoid)
Corona  a crown. adj.- coronary, coronoid or coronal; hence a coronal plane is parallel to the main arch of a crown which passes from ear to ear (c.f. coronal suture).

Costo/Costa  pertaining to the ribs

Conductivity  the ability to conduct an impulse to another region or another cell

Congenital  existing at birth.

Congestive heart failure  blood volume coming in is more than that pumped out - leading to fluid backup - backup from the LV results in fluid overload in the lungs - in the RV results in venous fluid retention and then swelling of dependant parts

Coronary Arteries  two arteries arising from the aorta that arch down over the top of the heart and branch out in additional arteries that provide B to the heart muscle – the main 4 being L main coronary artery, Circumflex coronary artery, L ant descending coronary artery, and R coronary artery. They join to form rings around the heart b/n the A & Vs and b/n the 2 Vs. These are the most commonly blocked arteries of the heart.

Cranium  comprises all of the bones of the skull except for the Mandible.

Crest  prominent sharp thin ridge of bone formed by the attachment of muscles particularly powerful ones eg Temporalis/Sagittal crest

Cuneate /Cuneus  a wedge / wedge-shaped

Dens  a tooth hence dentine and dental relating to teeth, denticulate having tooth-like projections adj dentate See odontoid

Depression  a concavity on a surface

Diaphysis  The shaft or body of a long bone. In the young this is the region between the growth plates & is composed of compact bone. pl.= diaphyses adj.= diaphyseal

Diploë  the cancellous bone between the inner and outer tables of the skull, adj.- diploic.

Echocardiogram  a study using high-frequency sound waves to picture or visualize the heart chambers, the thickness of the muscle wall, the heart valves and major BVs located near the heart. This is a non-invasive procedure.

Edentulous  without teeth

Elbow  any angular bend often in the arm, usually referring to the joint between the arm and the forearm

Eminence  a smooth projection or elevation on a bone as in iliopubic eminence.

Endocranium  refers to the interior of the “braincase” divided into the 3 major fossae anterior (for the Frontal lobes) middle (containing Temporal lobes) & posterior (for the containment of the Cerebellum).
Epiphysis
the end of a long bone beyond the growth plate or epiphyseal plate. Generally develops as a secondary ossification centre. There are 2 epiphyses to each long bone. Of a long bone the shafts are generally compact bone and the ends—epiphyses are trabecular bone. adj. = epiphyseal

External Auditory Meatus
ear hole

Exostosis
a bony outgrowth from a bony surface, often due to irritation (as in swimmer’s ear) and may involve ossification of surrounding tissues such as muscles or ligaments.

Facet
a face, a small bony surface (occlusal facet on the chewing surfaces of the teeth) seen in planar joints.

Falciform
relating to shapes that are in a sickle shape so falciform ligaments curve around and end in a sharp point.

Fissure
a narrow slit or gap from cleft.

Fontanelle
a fountain, associated with the palpable pulsation of the brain as in the anterior fontanelle of an infant. These soft spots on the skull are cartilagenous connective tissue coverings “joints” which allow for skull cranial expansion and then become the mould for the bone development and shape joining long the sutural lines, later becoming the Bregma.

Foramen
a natural hole in a bone usually for the transmission of blood vessels and/or nerves. (pl. foramina).

Fornix
an arch

Fossa
a pit, depression, or concavity, on a bone, or formed from several bones as in temporomandibular fossa. Shallower and more like a “bowl” than a cavity

Fovea
a small pit (usually smaller than a fossa)- as in the fovea of the occlusal surface of the molar tooth.

Genu
referring to the knee

Genio
long pit or furrow

Hallux
the big toe = the first toe

Hamus
a hook hence the term used for bones which “hook around other bones or where other structures are able to attach by hooking - hamulus = a small hook.

Hyoid
U-shaped

Incisura
a notch.

Inter
between

Intra
within

Introitus
an orifice or point of entry to a cavity or space.

Joint = Articulation
supporting structures

Lacerum
something lacerated, mangled or torn e.g. foramen lacerum small sharp hole at the base of the skull - often ripping tissue in trauma.
Lacrimal related to tears and tear drops. (noun lacrima)
Lambda Greek letter a capital 'L' - written as an inverted V (adj. lambdoid) - used to name the point of connection b/n 3 skull bones Occipital and L & R Temporal bones.
Lamina a plate as in the lamina of the Vertebra a plate of bone connecting the vertical and transverse spines (pl. laminae)
Ligament a band of tissue which connects bones (articular ligaments) or viscera - organs (visceral ligaments).
Linea a line as in the Nuchal lines of the Occitipum
Linguai pertaining to the tongue
Locus a place (c.f. location, locate, dislocate).
Lymphatic a vessel which carries fluid to the heart
Magnum large pl magna
Malleus hammer (as in the ear ossicle)
Mandible from the verb to chew, hence, the movable lower jaw; adj.- mandibular.
Mastoid breast or teat shape - mastoid process of the Temporal bone.
Maxilla the jaw-bone; now used only for the upper jaw; adj.- maxillary.
Meatus a short passage; adj.- meatal as in external acoustic meatus connecting the outer ear with the middle ear.
Mediastinum the region in the thorax b/n the lungs, ant. boundary - the sternum post. the VC, includes the heart, roots of the great vessels, oesophagus and trachea.
Meniscus Gk. crescent as in the crescent shaped cartilages on the top of the Tibia
Mental relating to the chin (mentum = chin not mens = mind).
Meta an extension of: cf. metacarpal = extension of the wrist
Metaphysis the slightly expanded end of the shaft of a bone.
Microvasculature the network of small BVs arterioles → capillaries → venules in a tissue
Minimally Invasive Heart Surgery a variety of approaches using smaller incisions to reduce the trauma of surgery and potentially speed recovery.
Mitrval Valve the valve that controls the BF b/n the LA & LV in the heart.
Murmur a specific sound emanating from the chest in addition to the normal HS.
Myocardial Infarct also called “heart attack”; the sudden interruption or insufficiency of the supply of B to the heart, typically resulting from occlusion or obstruction of a coronary artery and often characterized by severe chest pain
Myocardial infarction death of myocardial tissue due to anoxia.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurocranium</td>
<td>the neurocranium refers only to the braincase of the skull.</td>
</tr>
<tr>
<td>Non-invasive procedure</td>
<td>a procedure that can be done outside of the body, such as an X-ray or ECG.</td>
</tr>
<tr>
<td>Notch</td>
<td>an indentation in the margin of a structure.</td>
</tr>
<tr>
<td>Nucha</td>
<td>the nape or back of the neck <em>(adj. - nuchal).</em></td>
</tr>
<tr>
<td>Occiput</td>
<td>the prominent convexity of the back of the head</td>
</tr>
<tr>
<td>Occiput = Occipital bone</td>
<td><em>(adj. occipital)</em></td>
</tr>
<tr>
<td>Occulus</td>
<td>an eye</td>
</tr>
<tr>
<td>Odontoid</td>
<td>relating to teeth, toothlike see Dens</td>
</tr>
<tr>
<td>Orbit</td>
<td>a circle; the name given to the bony socket in which the eyeball rotates; <em>(adj. - orbital).</em></td>
</tr>
<tr>
<td>Orifice</td>
<td>an opening.</td>
</tr>
<tr>
<td>Os</td>
<td>a bone or pertaining to bones <em>(adj. osseus)</em></td>
</tr>
<tr>
<td>Ossification</td>
<td>the process of turning something into bone, i.e. from one tissue to another as in cartilaginous ossification from cartilage into bone</td>
</tr>
<tr>
<td>Ostium</td>
<td>a door, an opening, an orifice.</td>
</tr>
<tr>
<td>Otic</td>
<td>pertaining to the ear</td>
</tr>
<tr>
<td>Oval</td>
<td>oval shaped</td>
</tr>
<tr>
<td>Palate</td>
<td>a roof <em>(adj. - palatal or platatine)</em></td>
</tr>
<tr>
<td>Palpitation</td>
<td>irregular HB that can be felt by a person.</td>
</tr>
<tr>
<td>Parietal</td>
<td>pertaining to the outer wall of a cavity from paries, a wall.</td>
</tr>
<tr>
<td>Parotid</td>
<td>pertaining to a region beside or near the ear</td>
</tr>
<tr>
<td>Pars</td>
<td>a part of</td>
</tr>
<tr>
<td>Pecten</td>
<td>a comb.</td>
</tr>
<tr>
<td>Perikymata</td>
<td>transverse ridges and the grooves on the surfaces of teeth</td>
</tr>
<tr>
<td>Periosteum</td>
<td>layer of fascial tissue connective tissue on the outside of compact bone not present on articular (joint) surfaces see endostium</td>
</tr>
<tr>
<td>Petrous</td>
<td>pertaining to a rock / rocky / stoney <em>(adj. petrosal)</em></td>
</tr>
<tr>
<td>Phalanx</td>
<td>pertaining to flanks of soldiers - phalanges a row of soldiers used for a row of fingers or toes</td>
</tr>
<tr>
<td>Pollex</td>
<td>thumb</td>
</tr>
<tr>
<td>Process</td>
<td>a general term describing any marked projection or prominence as in the mandibular process.</td>
</tr>
<tr>
<td>Prominens</td>
<td>a projection</td>
</tr>
<tr>
<td>Pseudoarthrosis</td>
<td>false or new joint due to the nonhealing of a fracture</td>
</tr>
<tr>
<td>Pterion</td>
<td>a wing; the region where the tip of the greater wing of the sphenoid meets or is close to the parietal, separating the frontal from the squamous region of the temporal bone.</td>
</tr>
<tr>
<td>Pubis</td>
<td>hairy, that part of the hip bone with hair over the surface <em>(adj public pl pubes)</em></td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------</td>
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<tr>
<td>Pulmonary Valve</td>
<td>the heart valve located b/n the RV and the pulmonary artery that controls BF to the lungs.</td>
</tr>
<tr>
<td>Ramus</td>
<td>branch as in the superior pubic ramus the superior or higher branch of the pubic bone</td>
</tr>
<tr>
<td>Recess</td>
<td>a secluded area or pocket; a small cavity set apart from a main cavity.</td>
</tr>
<tr>
<td>Rectus</td>
<td>straight - erect</td>
</tr>
<tr>
<td>Ridge</td>
<td>elevated bony growth often roughened.</td>
</tr>
<tr>
<td>Rotundum</td>
<td>Round</td>
</tr>
<tr>
<td>Sagittal</td>
<td>an arrow, the sagittal suture is notched posteriorly, making it look like an arrow by the lambdoid sutures.</td>
</tr>
<tr>
<td>Sesamoid</td>
<td>grainlike</td>
</tr>
<tr>
<td>Sigmoid</td>
<td>S-shaped, from the letter Sigma which is S in Greek.</td>
</tr>
<tr>
<td>Sinus</td>
<td>a space usually within a bone lined with mucous membrane, such as the frontal and maxillary sinuses in the head, (also, a modified BV usually vein with an enlarged lumen for blood storage and containing no or little muscle in its wall). Sinuses may contain air, venous or arterial blood, lymph or serous fluid depending upon location and health of the subject adj.- sinusoid.</td>
</tr>
<tr>
<td>Skull</td>
<td>refers to all of the bones that comprise the head.</td>
</tr>
<tr>
<td>Sphenoid</td>
<td>a wedge i.e. the Sphenoid is the bone which wedges in the base of the skull between the unpaired frontal and occipital bones adj. - sphenoid.</td>
</tr>
<tr>
<td>Spine</td>
<td>a thorn adj. - spinous descriptive of a sharp, slender process/protrusion.</td>
</tr>
<tr>
<td>Splanochranium</td>
<td>the splanchocranium refers to the facial bones of the skull.</td>
</tr>
<tr>
<td>Sulcus</td>
<td>long wide groove often due to a BV indentation</td>
</tr>
<tr>
<td>Sustenaculum</td>
<td>a supportive structure as in the sustenaculum tali = a structure which supports the Talus in the foot</td>
</tr>
<tr>
<td>Suture</td>
<td>The saw-like edge of a cranial bone that serves as joint between bones of the skull.</td>
</tr>
<tr>
<td>Stylos</td>
<td>an instrument for writing hence adj. - styloid a pencil-like structure.</td>
</tr>
<tr>
<td>Symphysis</td>
<td>a cartilagenous joint or a growth with bone-cartilage-bone</td>
</tr>
<tr>
<td>Syn</td>
<td>together in the close proximity of or fusion of 2 structures</td>
</tr>
<tr>
<td>Syndesmosis</td>
<td>tight inflexible joints b/n 2 bones little to no movement many axial joints</td>
</tr>
<tr>
<td>Synostosis</td>
<td>fusion of any joints</td>
</tr>
<tr>
<td>Synovial joint</td>
<td>any moveable joint with synovial fluid b/n the 2 opposing bones - most moving joints are synovial</td>
</tr>
<tr>
<td>Talus</td>
<td>ankle (Gk. bend)</td>
</tr>
</tbody>
</table>
Tarsus

pertaining to any bones joining the foot with the leg
adj. - tarsal (Gk wickerwork referring to the basketlike structure of the os tarsus with the ligaments)

Temporal

refers to time and the fact that grey hair (marking the passage of time) often appears first at the site of the temporal bone.

Tendon

a tie or cord of collagen fibres connecting muscle with bone (as opposed to articular ligaments which connect bone with bone)

Tentorium

a tent.

Trabecula

a “little” beam i.e. supporting structure or strut pl. trabeculae

Tricuspid Valve

the heart valve that controls the BF from the RA into the RV.

Trochanter

pertaining to a small wheel or disc, in the Femur it is a large disc shaped tuberosity

Trochlea

a pulley that part of the bone or ligamantous attachment that pulls the bone in another direction as in the elbow or the ankle

Tubercle

a small process or bump, an eminence..

Tuberculum

a very small prominence, process or bump.

Tuberosity

a large rounded process or eminence, a swelling or large rough prominence often associated with a tendon or ligament attachment.

Turbinate

a child’s spinning top, hence shaped like a top; an old term for the nasal conchae.

Tympanum

a drum pl. tympani

Uncus

a hook adj. - uncinate.

Vagal maneuver

stimulation of the vagal N to decrease HR and BP may cause fainting

Vagina

A sheath; hence, invagination is the acquisition of a sheath by pushing inwards into a structure, and evagination is similar but produced by pushing outwards adj. - vaginal.

Valve

there are 4 heart valves: mitral, aortic, pulmonary and tricuspid, that act as one-way "doors" between the chambers of the heart.

Vein

a BV which carries B to the heart

Ventricles

lower heart 2 chambres – 3X the volume of the atria

Wormian bone

eextrasutural bone in the skull

Zygoma

a yoke , hence, the bone joining the maxillary, frontal, temporal & sphenoid bones adj zygomatic.
Anatomical Planes and Relations

This is the anatomical position.

A = Anterior Aspect from the front = or / Posterior Aspect from the back.
   Used interchangeably with ventral and dorsal respectively
B = Lateral Aspect from either side
C = Transverse / Horizontal plane
D = Midsagittal plane = Median plane; trunk moving away from this
   plane = lateral flexion or lateral movement.
   plane medial movement; limbs moving away from this direction
   = abduction; limbs moving closer to this plane = adduction
E = Coronal plane
F = Median
Anatomical Movements - Upper limb & shoulder

- Arm extension in sagittal plane / shoulder movement
- Arm abduction - away from median plane / adduction - towards the median plane - shoulder movement
- Shoulder extension in the sagittal plane
- Shoulder abduction in the coronal plane (with elbow flexion)
- Shoulder elevation - reverse movement shoulder depression shoulder movement
- Wrist extension
- Wrist flexion
Foot – dorsum

Tendons

Anterior view - showing the tendons of the foot.

1 Peroneus tertius
2 Extensor digitorum
   b = brevis showing muscle and tendon
   L = longus
3 Extensor hallucis longus
4 Tibialis anterior
5 Peronius brevis
6 dorsalis pedis artery
7 1st dorsal MT artery
Foot – sole Fascia
First layer of muscles

**Inferior view**

1. superficial transverse metatarsal lig.
2. digital bands – longitudinal extensions of 4 ...
3. transverse bands of 4
4. central aponeurosis
The foot has 4 muscle layers overlaid with a strong protective fascia.

the central aponeurosis (4) is similar to the palmar aponeurosis with extensions (2) to accommodate the extended MTs. A bridging fortified transverse ligament (1) joints all the heads of the MTs to reflect the weight bearing function of the foot

5  abductor digiti minimi
6  flexor digitorum brevis
7  abductor hallicus
The A to Z of Surface Anatomy

Foot – sole

2nd & 3rd muscle layers

Inferior view

1. Flexor Hallicus Longus – tendon
2. Lumbrical muscles
3. Posterior tibial artery and N
   L = lateral br
   m = medial br
4. Flexor Digitorum Longus – tendons
5. Quadratus Plantae
The 2nd layer consists of tendons to muscles which are found in the leg – the long muscles + some of the short muscles (i.e. those completely in the foot itself) – and the BVs and Ns

The 3rd layer contains the equivalent of the thenar (7) & hypothenar (8) muscles which insert into the long plantar lig (9) - technically in the 4th layer.

6 Abductor hallucis
7 Flexor hallucis brevis
8 Flexor digiti minimi brevis
9 plantar lig = spring lig (maintains the medial long arch)
Foot – sole
4th muscle layer
dermatomes

Inferior view

1 peroneus lig b = brevis, L = longus
2 Tibialis posterior
3 plantar calcaneo - navicular lig & long plantar lig
4 Plantar interossei
The 4th layer consists of tendons of muscles which are found in the leg and primarily act on the foot and ankle joint. Major ligaments are found here and deep to this layer which support the arches of the foot along with bony factors.

Dermatome distribution of the sole of the foot can be used to test peripheral nerves.
Foot – sole

Bones

Inferior view - showing the bones of the foot.

The bones of the foot are arranged in layers as in the hand only with longer MT bones and shorter phalanges.

The only palpable bones of the sole are the heads of the MTs (3h) and the posterior aspect of the Calcaneus (8p), the other bones are deep to the short muscles of the foot. The sesamoid bones (2) can be felt over the head of the 1st MT embedded in the short tendons.

1. Ph – all toes have 3 d = distal, m = middle & p = proximal except the Hallux (big toe which like the Thumb has only 2)

2. sesamoid bones

3. MT b = base, h = head & s = shaft

4. Cuniform bones
   i = intermediate
   L = lateral
   m = medial

5. Cuboid

6. Navicular

7. Talus

8. Calcaneus p = posterior / palpable aspect
Forearm – Bones Pronation

The forearm in the anatomical position is supinated, it may be pronated by – rotating the lower end of the Radius (3) anteriorly over the Ulna (2) 180° while the Humerus (1) remains unmoved this is possible because of the ligaments at the elbow joint and the respectively named supinators and pronator muscles (see the A to Z of Skeletal muscles for details).
Forearm – Bones Supination

It articulates with the first layer of carpal – wrist – bones, 4 Scaphoid, 5 Lunate, 6 Triquetral.
Forearm – Muscles

Anterior (Flexor surface) -  
Deep layer of muscles.

The forearm contains the muscle bellies of most finger flexors in 3 layers: deep & 2 superficial layers on the flexor - anterior surface.  
The tendons of these muscles move under the Flexor Retinaculum (not shown - see Hand) to attach onto the digital phalanges (see the A to Z of Skeletal muscles for details).

1  Biceps  
2  Supinator  
3  Flexor Pollicus Longus
4  Pronator Quadratus
5  Flexor Digitorum Profundus
Forearm – Muscles

Superficial layers of muscles

The forearm contains the muscle bellies of most finger flexors. The tendons of these muscles move under the Flexor Retinaculum (not shown - see Hand) to attach onto the digital phalanges (see Hand & the A to Z of Skeletal Muscles for details).

1. Brachioradialis
2. Flexor Carpi Radialis
3. Pronator Teres
4. Flexor Carpi Ulnaris
5. Palmaris Longus
6. Pisiform bone
Forearm – Muscles

Anterior (Flexor surface) -

The Flexor Digitorum Superficialis is the biggest muscle belly in the forearm and lies most superficially – underneath are the rest of the superficial muscles.

7  Flexor Digitorum Superficialis
8  tendons to the middle and ring fingers (lying anterior to the tendons to the index and little fingers)
Forearm – Muscles

Posterior (Extensor surface) - deep layer

The forearm contains the muscle bellies – tendons extend to the phalanges passing under the Extensor Retinaculum (not shown - see Hand).

1. Supinator
2. Abductor Pollicus Longus
3B. Extensor Pollicus Brevis
3L. Extensor Pollicus Longus
4. Extensor Indicis
5B. Extensor Carpi Radialis Brevis
5L. Extensor Carpi Radialis Longus
6. Flexor Carpi Ulnaris
Forearm – Muscles

*Posterior (Extensor surface) - superficial layer*

The forearm contains the muscle bellies - tendons extend to the phalanges passing under the Extensor Retinaculum (not shown - see Hand).

7 Brachioradialis
8 Extensor Digitorum
9 Extensor Carpi Ulnaris
10 Extensor Digiti Minimi
11 Anconeus
12 Ulnar N
The A to Z of Surface Anatomy

Genitalia – Female

Inferior view -
showing the features of the female peroneal area in detail.
Note the Peroneal body is inferior to this.

Medium level view

1 Mons Pubis
2 Labia Majora
3 area of hair & pigmentation
4 area of smooth delicate skin – less pigmentation
5 Prepuce
6 Clitoris – enlarges on stimulation
7 Urethral sphincter & opening
8 Labia Minora – edge – engorged on stimulation
9 wall of the Labia Minora
10 vaginal opening
11 fourchette
### Gluteal Region = Buttocks

### Posterior Thigh = Back of the Leg

#### Bones

<table>
<thead>
<tr>
<th>Letter</th>
<th>Bone Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Gluteal region</td>
</tr>
<tr>
<td>B</td>
<td>Posterior thigh</td>
</tr>
<tr>
<td>C</td>
<td>Bones</td>
</tr>
<tr>
<td>D</td>
<td>1 iliac crest</td>
</tr>
<tr>
<td>E</td>
<td>2 posterior iliac spine (i = inferior, s = superior)</td>
</tr>
<tr>
<td>F</td>
<td>3 sciatic notch (g = greater, L = lesser)</td>
</tr>
<tr>
<td>G</td>
<td>4 L4 spine</td>
</tr>
<tr>
<td>H</td>
<td>5 L5 spine</td>
</tr>
<tr>
<td>I</td>
<td>6 Sacrum</td>
</tr>
<tr>
<td>J</td>
<td>7 femur (h = head, g = greater trochanter, L = lesser trochanter)</td>
</tr>
<tr>
<td>K</td>
<td>8 gluteal tuberosity</td>
</tr>
<tr>
<td>L</td>
<td>9 linea aspera</td>
</tr>
<tr>
<td>M</td>
<td>10 femoral condyle (L = lateral, m = medial)</td>
</tr>
<tr>
<td>N</td>
<td>11 adductor tubercle</td>
</tr>
<tr>
<td>O</td>
<td>12 ischeal tuberosity</td>
</tr>
<tr>
<td>P</td>
<td>13 ischeal spine</td>
</tr>
<tr>
<td>Q</td>
<td>14 sacro-iliac joint</td>
</tr>
<tr>
<td>R</td>
<td>15 Coccyx</td>
</tr>
</tbody>
</table>

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The A to Z of Surface Anatomy

Dr. A. L. NEILL
BSc MSc MBBS PhD FACBS
medicalamanda@gmail.com
www.amandasatoz.com

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Please adjust SPINE to book thickness
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Back cover ‘outside view’