

diagnoses. Calcified materials and air absorb ultrasound so it is of little use in bone, lung, and bowel studies. Fluids are good conductors of sound and therefore it is especially good for determining the cystic versus solid nature of structures and in obstetrics, gynecology, and pediatrics, where ionizing radiation may be harmful.

Radiologic imaging is rapidly evolving and includes many other techniques such as radionuclide imaging, digital subtraction angiography, positron emission tomography, and dynamic spatial reconstruction, which are beyond the scope of this book. The user of this text will note that both traditional negative and positive radiographs are used. The positive prints reverse the density relationships or radiographs and are thus similar to what would be seen by fluoroscopy. Positive print radiographs are commonly used in international radiologic journals.

ANATOMICAL AND MEDICAL TERMINOLOGY

Through the efforts of international nomenclature committees, the terminology of anatomy has been greatly simplified and learning made easier by requiring that names for structures be descriptive. Likewise, anatomical terms are more readily learned and understood when one has a basic knowledge of word roots and stems. The following stems, prefixes, and suffixes are commonly used in anatomy.

Stems

aden-	gland (adenohypophysis)
algia-	pain (neuralgia)
angio-	vessel (angiology)
arthro-	joint (arthritis)
articulus-	joint (articulation)
caud-	tail (caudal)
cephal-	head (cephalic)
chole-	bile (cholecystectomy)
chondro-	cartilage (perichondrium)
col-	colon (colostomy)
colp-	related to vagina (coloporrhaphy)
costa-	rib (costal cartilage)
crotic-	pulse (bradycrotic)
cyte-	cell (cytology)
cyst-	sac, bladder (cholecystectomy)
derma-	skin (epidermis)
emia-	blood (anemia)
entero-	intestine (dysentery)
esthesia-	feeling, touch (anesthesia)

gastro-	stomach (gastroenteritis)
glossa-	tongue, speech (glossitis)
hemo-	blood (hematology)
hepat-	liver (hepatitis)
hyster-	related to uterus (hysterectomy)
laparo-	flank, abdominal wall (laparotomy)
lith-	stone, calculus (cholelith)
lysis-	to dissolve (hemolysis)
malacia-	softening (osteomalacia)
mast-	breast (mastectomy)
melano-	black, pigmented (melanocyte)
metro-	related to uterus (myometrium)
myo-	muscle (myosin)
nephro-	kidney (nephrology)
nychia-	finger nail, toenail (eponychium)
odonto-	tooth (orthodontics)
oophor-	ovary (oophorectomy)
ophthalmo-	eye (ophthalmology)
opia-	eye (myopia)
orchi-	testis (orchiectomy)
os-, osteo-	bone (osteology)
ot-	ear (otology)
path-	disease (pathology)
pedi-	child (pediatrics)
ped-	foot (pedicure)
pes-	foot (pes anserinus)
phleb-	vein (phlebitis)
plasia-	to form (neoplasm)
pnea-	breathing (dyspnea)
pneumo-, pulmo-	lung, air (pneumonia)
podo-	foot (podiatrist)
procto-	rectum, anus (proctocele)
ptya-	saliva (ptyalism)
py-	pus (pyemia)
pyelo-	pelvis of kidney (pyelogram)
radio-	rays, radiation (radiograph)
ren-	kidney (renal)
rhino-	nose (rhinitis)
salpingo-	tube, trumpet (mesosalpinx)
stoma-	mouth, opening (colostomy)
steth-	chest (stethoscope)
thorac-	chest (thoracic)
vesico-	sac, bladder (seminal vesicle)

Prefixes

a-	without, lack of, negation (e.g., agenesis)
ab-	from, away from (abduct)
ad- (af, an-, ap-)	to (adductor)
ambi-	both (ambidextrous)
ana-	up, apart (anatomy)

anom-	deviation from normal (anomaly)
ante-	before (antebrachium)
anti-	against (antibody)
apo-	from (aponeurosis)
auto-	self (autoimmune)
bi-	double, twice, two (bilateral)
bio-	life (biology)
circum-	around (circumflex)
co-	with, together (congenital)
de-	away from (decussation)
di-	double, twice, two (digastric m.)
dia-	through, apart (diaphysis)
diplo-	double
dis-	apart from, negation (disarticulate)
dys-	with difficulty, bad (dyspnea)
e- (ex-)	out of, out from (extensor)
ec-	out, out from (ectopic)
ecto-	outer, outside (ectoderm)
en- (em-)	in (encephalon)
endo-	within (endoderm)
epi-	on, upon (epidermis)
eso-	inward (esophagus)
eu-	good, well (euphoria)
exo-	outside (exogenous)
hemi-	half (hemisphere)
hetero-	other, different (heterogenous)
homo-	same, like (homogenous)
hyper-	over, above (hypertension)
hypo-	less, under (hypoderm)
in-	in, or inside (insertion), not (insomnia)
infra-	below (infraspinatus m.)
inter-	between (intercostal)
iso-	equal (isotonic)
macro-	large, big (macroscopic)
mag-	large (adductor magnus m.)
mes-	related to mesentery
meso-	middle (mesoderm)
micro-	small (microscopic)
meta-	beyond, after, between (metacarpal)
neo-	new (neoplasia)
oligo-	scanty, few (oliguria)
ortho-	straight, correct, regular (orthopedic)
pan-	all (pancreas)
para-	nearby, nearly (parasagittal)
per-	through, excessively, super (percutaneous)
peri-	around (periosteum)
poly-	many, excessive (polycystic)
post-	after, behind (postnatal)
pre-	before, in front of (preganglionic)
pseudo-	false (pseudopregnancy)
pro-	before, forward (pronator)

re-	back, again (reflex)
retro-	backward, behind (retroperitoneal)
semi-	half (semicircular)
sub-	under, less than (subscapular)
super-	above, excessively (superior)
supra-	above, upon (supraspinous)
syn- (sym-)	with, together (synarthrosis)

Suffixes

-er	on noun, expresses the agent or person concerned (e.g. psychiatrist, doctor)
-ist	
-ite	
-or	
-ia	on noun, expresses action or condition (anemia, tuberculosis, attrition)
-osis	
-tion	
-ity	on noun, expresses quality (acidity)
-m	expresses the result of an action (trauma)
-ma	
-cle	diminutive suffixes (tubercle)
-cule	
-culus	
-ium	
-olus	
-able	on adjective, expresses ability (flexible)
-ible	
-ac	on adjective, expresses pertaining to or related to (cardiac, medical)
-al	
-ad	
-ic	
-ious	
-cele	herniation or protrusion (cytocele)
-ectasis	dilation of (bronchiectasis)
-ectomy	excision of (tonsillectomy)
-ectopy	displacement of (ectopic pregnancy)
-gram	something written, recorded (angiogram)
-graph	write, record (radiograph)
-itis	inflammation of (peritonitis)
-oid	resemblance to (steroid)
-oma	tumor of (carcinoma)
-osis	abnormal condition of (nephrosis)
-ostomy	opening into for drainage (colostomy)
-otomy	incision into (laparotomy)
-penia	poverty, deficiency (leucopenia)
-physis	to grow (epiphyseal plate)
-plasty	repair (angioplasty)
-rrhea	discharge, flow (diarrhea)
-rrhage	bursting out, usually blood (hemorrhage)
-rrhaphy	repair, suture of (herniorrhaphy)
-trophy	nutrition, growth (atrophy)