

ABBREVIATION GLOSSARY

ADC	apparent diffusion coefficient	mm	millimeter
AML	angiomyelolipoma	MRA	magnetic resonance angiography/angiogram
BMRI	breast magnetic resonance imaging	MRBX	MR-guided biopsy
BPH	benign prostate hyperplasia	MRCP	magnetic resonance cholangiopancreatography
BRCA	breast cancer	MRS	magnetic resonance spectroscopy
DCIS	ductal carcinoma in-situ	msec	millisecond
DIEP	deep inferior epigastric perforator	NMLE	non-mass-like enhancement
DTI	diffusion tensor image	NPO	nothing by mouth
DWI	diffusion-weighted imaging	PCa	prostate cancer
EPI	echo planar imaging	PSA	prostate-specific antigen
ERCP	endoscopic retrograde cholangiopancreatography	PSD	pulse sequence database
ESP	echo spacing	RBW	receiver bandwidth
FFT	Fast Fourier Transform	RES	reticuloendothelial cell system
FIESTA	fast imaging employing steady-state acquisition	RF	radiofrequency
FISP	fast imaging with steady-state precession	ROI	region of interest
FNH	focal nodular hyperplasia	SAR	Specific Absorption Rate
FOV	field-of-view	SER	Signal Enhancement Ratio
FSE	fast spin echo	SNR	signal-to-noise ratio
GBCA	gadolinium-based contrast agent	SPGR	spoiled gradient echo
GRE	gradient echo (also gradient recalled echo)	SSFSE	single shot fast-spin echo
HCC	hepatocellular cancer	T	tesla
HRT	hormone replacement therapy	TE	echo time
IR	inversion recovery	TOF	time-of-flight
IVC	inferior vena cava	TR	repetition time
LCIS	lobular carcinoma in-situ	TRAM	transrectus abdominus myocutaneous flap
MIP	maximum intensity pixel projection	TSE	turbo spin echo
		UAE	uterine artery embolization

GLOSSARY

adenocarcinoma

a cancerous neoplasm originating in glandular tissue that develops in the lining or inner surface of an organ

adenoma

a common, benign epithelial neoplasm; tissue is abnormal but not considered cancerous

adenomatosis

a condition characterized by multiple glandular overgrowths

adenopathy

swelling or enlargement of the lymph nodes; also called lymphadenopathy

adnexa

accessory structures, eg, uterus, hair, nails, eyelids

agenesis

failure of an organ to develop during embryonic growth and development

alveoli

milk-producing gland

angiomyelolipoma (AML)

benign renal neoplasm

areola

pigmented area around the breast nipple

artifact

in the science of imaging, a substance or structure not naturally present in living tissue but which appears in an image

ascites

accumulation of fluid in the abdominal cavity

atypica

atypical cell that is sometimes considered a high-risk lesion

axilla, axillary tail

the area of the armpit and the extension of the breast tissue that extends into the underarm

background enhancement

normal enhancement within the breast parenchyma; associated with hormonal changes (menstrual cycle, hormone replacement therapy, hormone chemotherapy)

benign prostate hyperplasia (BPH)

increased prostate size

bicornuate uterus

uterus with two "horns," resulting in a heart-shaped uterus

BRCA (breast cancer) mutation/testing

BRCA1 is a tumor-suppression gene; BRCA2 is Type 2 susceptibility protein. Carriers of either are predisposed to develop both breast and ovarian cancer.

chemical saturation

a specialized technique that selectively saturates fat or water protons prior to acquiring data; the suppressing of either water or fat signal by using an RF pre-pulse that has an excitation frequency bandwidth specific to precessional frequency of fat or water

cholangiocarcinoma

cancer of the bile duct

cholangitis, sclerosing

chronic progressive disease of the bile ducts where they become inflamed, scarred and thickened, narrowed, and eventually obstructed

cholecystitis

inflammation of the gallbladder

choledocholithiasis

presence of a stone in the common bile duct

cirrhosis

chronic liver disease characterized by inflammation and degeneration that often leads to jaundice, ascites, and hepatic death. There are several causes of cirrhosis.

contiguous

in MRI, when two or more slices follow each other in close proximity in which their planes border on the other

contralateral

relating to the opposite side

Cooper's ligaments

bands of ligaments on the chest wall that support the breasts

cyst

an abnormal sac that contains gas, fluid, or semi-solid material

deep inferior epigastric perforator (DIEP)

surgical reconstruction of the breast where tissue and fat are taken from the abdomen but the muscle remains intact

dermoid

a type of fat-containing tumor

diffuse

spread out or disseminated, as opposed to focal

dilatation

also dilation; stretching or enlarging an opening

double duct sign

dilatation of both the pancreatic and bile ducts

ductal cancer in-situ (DCIS)

the most common form of non-invasive breast cancer; develops in the milk ducts

dysplasia/dysplastic

abnormal tissue development

echo spacing

the time between successive echo read-out gradient pulses

embolotherapy

used in pre-operative management of highly vascular neoplasms by occluding the artery

endexpiratory

the most quiescent part of the respiratory cycle

endometrioma

circumscribed mass of ectopic endometrial tissue

endometriosis

the presence of actively growing and functioning endometrial tissue outside the uterus

equilibrate

to keep in balance or in equilibrium

extracapsular

situated out the capsule or capsule lining

false negative

an incorrect test result due to the test's not recognizing an existing condition or finding

false positive

an incorrect test result due to the test's indicating a condition or finding that does not exist

Fast Fourier Transform (FFT)

an efficient method for calculating the frequency content (the Fourier Transform) of a digital signal. First described in 1965, it is universally used in MR image reconstruction.

fibroadenoma

a common benign finding on breast MRI; has a smooth margin and is round or oval in shape

fibrocystic

in the breast, common, benign changes characterized by the formation of small, fluid-containing cysts

fibrosis

formation of fibrous tissue as a reparative or reactive process

fiducial

a fixed point of reference or comparison; in BMRX, vitamin E capsules are often used as the fiducial

first-degree relative

mother, sister, daughter

focal

pertaining to a focus or foci, as opposed to diffuse

focal nodular hyperplasia (FNH)

a benign neoplasm that is normally solitary, lobulated, and non-encapsulated; frequently displays a central fibrous structure or scar with multiple radiating fibrous septa

ghosting

in MRI, image artifact where a shifted copy of the object or "ghost" appears elsewhere in the image. A common cause is patient motion in echo-planar imaging.

Gleason score

a classification of adenocarcinoma of the prostate by evaluation of the pattern of glandular differentiation; the tumor grade is numbered on a scale of 1 to 5.

gynecomastia

tissue enlargement of the male breast, usually hormone driven

hamartoma

“breast within a breast”; a rare, benign lesion that consists of fat, connective tissue, and glandular tissue

hemangioma

benign tumor consisting primarily of dilated or newly formed blood vessels

hematoma

a circumscribed collection of blood in a tissue or organ, usually clotted

hemochromatosis

a rare metabolic disorder caused by deposit of iron-containing substances, especially hemosiderin, and usually affecting the liver and pancreas

hemosiderin

an iron-containing protein that results from disorders of iron metabolism and breakdown of red blood cells

hemosiderosis

excessive deposit of hemosiderin

hepatic steatosis

a condition where fat is stored in the liver; also known as fatty infiltration of the liver

hepatocellular carcinoma (HCC)

also known as hepatoma; a primary malignancy that arises from the liver itself. Most commonly seen in patients with cirrhosis but occasionally seen in an otherwise normal liver.

hepatocyte

liver cell

hilum

the part of an organ where muscles and nerves enter and exit

inflammatory cancer

aggressive breast cancer that often involves over half the breast and infiltrates the skin and mammary tissues

inframammary fold

the natural boundary where the lower breast and chest meet

in-phase imaging

when fat and water protons resonate at the same frequency within the same voxel; controlled by TE in a GRE pulse sequence

invasive ductal carcinoma

the most frequently encountered cancer on BMRI; develops in the ducts and infiltrates the duct membrane and surrounding tissue

***k*-space**

the domain in which the information from each phase-encoding step is placed during a pulse sequence. Each “filled in” line of *k*-space corresponds to each phase-encoding step; once the required amount of *k*-space is filled, image reconstruction with a Fourier transform can begin

lactation

production of milk

lipoleiomyomata

a type of fat-containing tumor

lobular carcinoma

a form of adenocarcinoma, especially in the breast; less common than ductal carcinoma and usually composed of small cells

lobular carcinoma in-situ (LCIS)

a high-risk lesion found in the lobules of the breast

lobule

milk-producing gland

lymphadenopathy

enlarged lymph nodes found on radiologic exam; a disease process that affects a lymph node(s)

magnetic susceptibility

the ability of a material to become magnetized

mastitis

inflammation of the breast

maximum intensity pixel projection (MIP)

a projection image that is obtained from a 3D data set by selecting the maximum intensity along lines or rays that cut through the 3D image volume

medullary breast carcinoma

a subtype of ductal carcinoma

morphology

the outward appearance and internal form and structure of an organism

mucinous breast carcinoma

a subtype of ductal carcinoma

multicentric cancers

in the breast, tumors in another quadrant

multifocal cancers

in the breast, cancers with additional lesions in the same quadrant

myolipoma

a rare, benign neoplasm consisting mainly of fat cells

myoma

a benign neoplasm of muscular tissue

myomectomy

removal of a fibroid from the uterus through the vagina

navigator device

a navigation pulse usually placed at the diaphragm or dome of the liver that tracks a patient's respiratory cycle and triggers the sequence to acquire data during the expiratory phase

neoadjuvant therapy

chemotherapy given prior to surgery to shrink the size of the tumor

neoangiogenesis

formation of new blood supply that feeds tumor growth

neoplasm

abnormal mass of tissue due to neoplasia (abnormal proliferation of cells)

nephrogenic hypertension

hypertension caused by factors originating in the kidney

nephron

basic cell unit of the kidney

obturator

plastic targeting device inserted through a biopsy sheath

opacification

to make opaque; impenetrable by light

out-of-phase/opposed-phased imaging

when fat and water protons precess at 180° from each other within the same voxel. Controlled by TE in a GRE pulse sequence.

Paget's disease of the breast

a condition that outwardly can present like eczema and is indicative of underlying breast cancer

pancreas divisum

the most common anatomic variant of the pancreas. This results from failure of fusion of the dorsal and ventral pancreatic ducts and may be associated with an increased prevalence of acute pancreatitis. MRCP has been shown to have up to 100% accuracy for detection of pancreas divisum.

pancreatitis

inflammation of the pancreas. Acute pancreatitis comes on suddenly, while chronic pancreatitis is characterized by recurring or persistent pain.

papilloma

in breast MRI, benign tumors that occur along the milk ducts and can be a cause of benign nipple discharge

parenchyma

the specific tissue of an organ as opposed to connective or supporting tissue

parous

having given birth one or more times

peau d'orange

an orange peel appearance due to edematous, thickened skin overlying carcinoma of the breast. The edema results from stromal infiltration and lymphatic obstruction.

pedicle

a small stalk or stalk-like support; in breast MRI, it refers to the muscle attachment from a TRAM reconstruction

pheochromocytoma

a rare, usually benign adrenal tumor

phylloides

generally a benign breast mass, although there are malignant phylloides; resembles a fibroadenoma

pixel

smallest discrete part of a digital image (2D) display; from “picture element”

prostate-specific antigen (PSA)

the normal range is 0 – 3.9. PSA velocity is a marked increase in PSA within a short time of period, even if the PSA itself falls within the normal range.

prostatitis

inflammation of the prostate gland; can be chronic or acute

proteinaceous

resembling a protein

pseudocyst

an accumulation of fluid in a cyst-like structure

quiescent

being quiet, still, or at rest

renal hilar lymphadenopathy

disease of the lymph nodes specific to the adrenal glands and the renal hilar regions

respiratory trigger/triggering

acquisition of image data timed to the patient's respiratory cycle measured by placing air-filled bellows over the patient's abdomen. The expansion and contraction of the bellows allow the pulse sequence to acquire phase-encoding steps during the most quiescent (endexpiratory) period of the respiratory cycle, therefore greatly reducing respiratory ghosting.

saturation

a non-equilibrium state in MR in which equal numbers of spins are aligned against and with the magnetic field so that there is not any net magnetization

scout image

a quick set of data acquired in multiple planes to assist in planning subsequent sequences

sensitivity

ability of an imaging technique to determine whether there is pathology

septate, septation

when referring to the uterus, a divided uterus

seroma

fluid-filled surgical cavity

Signal Enhancement Ratio (SER)

a measurement of contrast uptake over time in a specific anatomical region

slew rate

describes overall gradient performance as a function of gradient amplitude and gradient rise time; described in units of tesla/meter/second

Specific Absorption Rate (SAR)

the RF power absorbed per unit of mass of an object, measured in watts per kilogram (W/kg)

FDA SAR limits

- 4 W/kg averaged over the whole body for any 15-minute period
- 3 W/kg averaged over the head for any 10-minute period
- 8 W/kg in any gram of tissue in the extremities for any 5-minute period

specificity

the ability of an imaging technique to determine what the specific pathology is

spoiled gradient echo

when residual transverse magnetization characteristic of gradient-echo pulse sequences is dephased by an RF pulse just prior to the next slice-excitation pulse. Dephasing the residual magnetization yields a T1-weighted image instead of a mixture of T2* and T1.

temporal resolution

how fast each 3D volume is acquired; as temporal resolution decreases, spatial resolution increases

transrectus abdominis myocutaneous flap (TRAM)

surgical reconstruction that uses the rectus abdominis muscle to supply blood to the fat and tissue used to form a new breast

tri-phasic flow velocities

when arterial blood flow moves in three distinct phases: fast forward, short reverse, then fast forward; becomes more prominent the farther away from the heart

unicornuate uterus

normal uterus, that is, with one "horn"

uterine stripe

the mucous membrane (endometrium) that lines the uterus

volume averaging

also known as "partial voluming effects." The incomplete visualization of anatomy in an image due to a slice thickness that is greater than the anatomy itself.

voxel

volume of tissue corresponding to a pixel on an MR image; from "volume element"

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