



ASSOCIATION OF ALEXANDRIA RADIOLOGISTS, PC

MRI AND CT CLINICAL INDICATIONS AND GUIDELINES FOR CONTRAST

Abdomen/Pelvis			
Indication	Preferred Study	Contrast	Comments
Adrenal Gland	CT Abdomen	With and without contrast	Contrast helps characterize masses that do not meet benign criteria on precontrast images and increases sensitivity for pheo. MRI without contrast may be of use if CT indeterminate or CT contrast contraindicated.
Appendicitis, Diverticulitis	CT Abdomen and Pelvis	Oral contrast +/- IV contrast	IV contrast increases sensitivity and specificity.
Cancer Patient	CT Abdomen and Pelvis with contrast; may need Chest CT	Oral and IV contrast	Chest CT usually follows an Abdomen and Pelvis CT for optimum IV contrast timing.
Focal Organ Pathology	CT Abdomen +/- Pelvis with contrast	IV Contrast preferred for all abdominal organs, although liver and renal mass characterization require study with and without contrast	Be sure to specify organ of concern on imaging request.
Non-focal Pain	CT Abdomen and Pelvis	Oral contrast, with or without IV contrast	IV needed for solid organ disease
Painful Hematuria, Rule Out Kidney Stone	CT Abdomen and Pelvis without contrast	No IV or oral contrast	If negative, may need follow up CT Abdomen Pelvis with IV contrast to evaluate for tumor.
Painless Hematuria	CT abdomen and Pelvis w. Urogram; MRI for contrast allergy or indeterminate CT	With and without contrast	
Pelvis, Female	MR for uterus and adnexa, CT preferred for bowel pathology	CT: Oral and sometimes IV contrast	
Pelvis, Male	CT for bowel or general symptoms; MR for prostate	CT with contrast MR with and without contrast	
Renal or Liver Mass	CT Abdomen and Pelvis; MR if patient has contrast allergy or if CT is indeterminate	With and without contrast	Useful for indeterminate renal cysts/lesions on US.

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APPOINTMENT SCHEDULING: 703.824.3260

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Brain

Indication	Preferred Study	Contrast	Comments
Acoustic Neuroma, Sensorineural Hearing Loss	MR (see comment)	YES, with and without	CT may be complementary if MRI is negative
AIDS	MR	YES, with and without	
Aneurysm	MRA preferred for screening; CTA for greater detail	YES for CTA	
Bleed, Acute	CT preferred	NO	
Bleed, Subarachnoid	CT	NO	
Brain Tumor, Metastases	MR preferred	YES, with and without	CT better for tumor calcification
CNS Infection, Abscess, Meningitis	MR	YES, with and without	
CVA	CT ≤ 24 hrs MR > 24 hrs	NO	Emergency evaluation if < 6hrs, consider CTA or MRA of neck and brain. If <24 hrs, referral to ER/Acute care facility for imaging is preferred
Dementia	MR preferred	NO	MR provides superior evaluation of white matter changes, patterns of atrophy
Headache	MR	(See comment)	Contrast with and without for meningeal/dural disease, mass, meningioma
MS	MR	YES, with and without	Contrast helpful if non-contrast is abnormal
Neurodegenerative Disorder	MR	NO	Parkinson's Disease, etc
Pituitary Tumor	MR	YES, with and without	MR far superior in this region
Posterior Fossa, Brainstem Lesion	MR	YES, with and without	MR far superior in this region
Pulsatile Tinnitus	MR preferred	YES, with and without	MRA neck and/or intracranial sometimes helpful. CT may be complementary if MRI is negative
Seizure	MR	YES, with and without	Contrast for adults if first time seizure, especially if age > 40.
Subdural Hematoma	Acute – CT Non-acute – MR	NO	MR detects smaller non-surgical acute SDH and sub-acute to chronic SDH
Venous Sinus Thrombosis	MRV preferred over CTV	YES, with and without	Usually can avoid conventional venography. MRV preferred but CT can be done more quickly in emergent situations.

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Chest

Indication	Preferred Study	Contrast	Comments
Breast Cancer Staging	MR	YES, with and without	Consult radiologist for other Breast MR indications
Breast Implant Evaluation	MR	NO	
Interstitial Lung Disease	High Resolution CT	NO	1 or 2 mm slices at 5 or 10 mm increments
Nodule, Mass, Infiltrate	CT	YES or NO	Peripheral nodules remote from hilum can be imaged without contrast. Contrast helpful for hilar disease.
Pulmonary Embolus or Aortic Pathology	CTA	YES	Image in a hospital setting if acute or chest pain

Spine

Indication	Preferred Study	Contrast	Comments
Compression Fracture	MR CT	NO NO	MR allows evaluation of bone marrow and fracture acuity, CT for operative planning
Cord Disease	MR	YES, with and without	Demyelination, Multiple Sclerosis, Syring
Cord Tumor	MR	YES, with and without	
Discitis/Ostomyelitis	MR	YES, with and without	
Herniated Disc, Cervical or Thoracic	MR	NO	Contrast not needed for most post-op C or T spine
Herniated Disc, Lumbar	MR preferred	If previous surgery, YES, with and without	Contrast essential to distinguish scar from disc after surgery.
Metastasis, Bone	MR CT sometimes useful adjunct	YES, with and without	CT useful if planning
Metastasis, Epidural or Intraspinal	MR	YES, with and without	Surgical reconstruction
Post Operative	MR CT	YES, with and without NO	MR for soft tissue abnormalities such as scar or disc. CT for bony fusion or hardware displacement.
Stenosis	MR preferred	NO	Post surgical patients require MRI with and without contrast; Helical CT with reconstructions useful if MR contraindicated

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Neck, Skull, Base, Orbit

Indication	Preferred Study	Contrast	Comments
Cavernous Sinus	MR	YES, with and without	MR: brain/sella CT with contrast may be useful if needed emergently.
Cranial Nerves	MR	YES, with and without	
Facial Trauma	CT	NO	
Hearing Loss, Conductive	CT	NO	Mastoid, middle ear, ossicles, conductive hearing loss
Hearing Loss, Sensorineural	MR/IAC	YES, with and without	IAC, brainstem/CPA, labyrinth
Neck Mass	CT or MR	YES, with and without	Bony detail better on CT. Tongue and perineural skull base disease better on MR.
Optic Nerves	MR preferred	YES, with and without	MR: Optic neuritis, high field best CT: meningioma, calcification
Orbit – Proptosis	CT preferred	YES	No contrast for Graves' Disease
Salivary Gland	CT	YES	Non-contrast first, then contrast
Sinus	CT for sinusitis MR for sinus tumor / mass	NO	CT defines ostial obstruction, bone changes
Skull Base	Either MR or CT	YES, with and without	CT sometimes necessary to better show bony detail.
Squamous CA	CT Preferred	YES	Skull base to thoracic inlet
Vocal Cord Paralysis	CT preferred	YES	Skull base to carina

Extremities

Indication	Preferred Study	Contrast	Comments
Extremity/Joint for Mass/Lump	MR	YES, with and without	
General Joint Pathology	MR	Usually NO	
Joint Infection/Osteomyelitis	MR	YES, with and without	Contrast increases sensitivity/specificity.
Lower Extremity Claudication	MRA or CTA	YES, with and without	Often needs non-invasive testing as adjunct to images.
Shoulder or Hip for Labral Tear, Post Op Shoulder for recurrent Rotator Cuff Tear	MR	Intra-articular contrast (MR Arthrogram)	Requires joint injection as well.

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