National Imaging Associates, Inc.*	
Clinical guidelines **PELVIS MRA (Angiography)**	**Original Date: May 2008**
CPT Codes: 72198	**Last Revised Date: April 2021**
Guideline Number: NIA_CG_039	**Implementation Date: January 2022**

IMPORTANT NOTE:
Abdomen/Pelvis Magnetic Resonance Angiography (MRA) & Lower Extremity MRA Runoff Requests: **Two authorization requests are required, one Abdomen MRA, CPT code 74185 and one for Lower Extremity MRA, CPT code 73725 (a separate Pelvic MRA request is not required).** This will provide imaging of the abdomen, pelvis, and both legs.

INDICATIONS FOR PELVIS MR Angiography / MR Venography (MRA/MRV): ~~Abdominal MRA can be added when indicated~~

Arterial:

EFor evaluation of known or suspected pelvic vascular disease:

- **Evidence of vascular abnormality seen on prior imaging studies.**
- For pelvic extent of known large vessel diseases (abdominal aorta, inferior vena cava, superior/inferior mesenteric, celiac, splenic, renal or iliac arteries/veins), e.g., aneurysm, dissection, arteriovenous malformations (AVMs), ~~and~~ fistulas, intramural hematoma, and vasculitis.
- ~~Evidence of vascular abnormality seen on prior imaging studies.~~
- For suspected pelvic extent of aortic dissection **(approve CTA/MRA abdomen and pelvis).**
- For evaluation of known or suspected aneurysms limited to the pelvis or evaluating pelvic extent of aortic aneurysm (Khosa, 2011; Uberoi, 2011; Wanhainen, 2019)
    - Known or suspected iliac artery aneurysm **AND** equivocal or indeterminate Doppler ultrasound results and contraindication to CTA
    - If repeat Doppler ultrasound is indeterminate
    - Suspected complications of known aneurysm as evidenced by clinical findings such as new onset of pelvic pain.
- Follow--up of iliac artery aneurysm:
    - Every three years for diameter 2.0 – 2.9 cm
    - Annually if between 3.0-3.4 if Doppler ultrasound is inconclusive.

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- If >3.5 cm, <six month ~~follow~~ **follow** up (and consider intervention) (Wai~~n~~hainen, 2019)~~.~~

- ~~Suspected retroperitoneal hematoma or hemorrhage (to~~ **To** determine a vascular source of **retroperitoneal hematoma or** hemorrhage in the setting of trauma, tumor invasion, fistula or vasculitis **when CTA is contrainidacted**~~,~~ (CT rather than MRA/CTA~~)~~ is **the** ~~sufficient and the~~ modality of choice for diagnosing hemorrhage (Abe, 2010)~~)~~.
- **For known or suspected mesenteric ischemia/ischemic colitis when CTA is contraindicated (can approve MRA abdomen and pelvis) (ACR, 2018)**
- ~~For evaluation of suspected pelvic vascular disease or pelvic congestive syndrome when findings on ultrasound are indeterminate (MR or CT venography (CTV) may be used as the initial study for evaluating pelvic thrombosis or thrombophlebitis) (Bookwater, 2019; Knuttinen, 2015)~~
- ~~For diffuse, unexplained lower extremity edema with negative or inconclusive ultrasound (Hoshino, 2016)~~
- ~~For evaluation of venous thrombus in the inferior vena cava (Aw-Zoretic, 2016)~~
- ~~Venous thrombosis if previous studies have not resulted in a clear diagnosis (ACR, 2013).~~
- Vascular invasion or displacement by tumor (Conventional CT or MRI also appropriate) (Certik, 2015)~~.~~
- ~~For known or suspected mesenteric ischemia (ACR, 2018)~~
- **For patients with fibromuscular dysplasia (FMD), a one-time vascular study of the abdomen and pelvis (CTA or MRA) (Kadian-Dodov, 2016)**
- **For patients with Vascular Ehlers-Danlos syndrome or Marfan syndrome recommend a one-time study of the abdomen and pelvis (CTA/MRA)**
- **For Loey~~t~~z-Dietz imaging at least every two years (Chu, 2014)~~.~~**
- **For assessment in patients with spontaneous coronary artery dissection (SCAD) can be done at time of coronary angiography (also approve CTA pelvis) (Crousillat, 2020)~~.~~**

Venous~~:~~

- ~~•~~ **For evaluation of suspected pelvic vascular disease or pelvic congestive syndrome when findings on ultrasound are indeterminate (MR or CT venography (CTV) may be used as the initial study for evaluating pelvic thrombosis or thrombophlebitis) (Bookwater, 2019; Knuttinen, 2015)**
- ~~•~~ **For diffuse, unexplained lower extremity edema with negative or inconclusive ultrasound (Hoshino, 2016)**
- ~~•~~ **For evaluation of venous thrombus in the inferior vena cava (Aw-Zoretic, 2016)**
- ~~•~~ **Venous thrombosis if previous studies have not resulted in a clear diagnosis (ACR, 2013)~~.~~**
- ~~•~~ **Vascular invasion or displacement by tumor (Conventional CT or MRI also appropriate) (Certik, 2015)~~.~~**

- **For known/suspected May-Thurner Syndrome (iliac vein compression syndrome) (Al-Nouri 2011; Kalu, 2013)**
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~~**Other vascular indications:**~~

- ~~For suspected May-Thurner Syndrome (iliac vein compression syndrome) (Al-Nouri 2011; Kalu, 2013)~~
- ~~For patients with fibromuscular dysplasia (FMD) a one-time vascular study of the abdomen and pelvis (Baradhi, 2019; Kadlian-Dodov, 2016)~~
- ~~For patients with Ehlers-Danlos or Marfan syndrome, recommend a one-time vascular study of the abdomen and pelvis~~
- ~~For Loeys-Dietz vascular imaging every two years include abdomen MRA (Chu, 2014)~~

Pre-operative evaluation~~:~~

(ACR, 2017)

- Evaluation **prior to**~~of~~ interventional vascular ~~procedures prior to endovascular aneurysm repair (EVAR), or~~ for luminal patency versus restenosis due to conditions such as atherosclerosis, thromboembolism, and intimal hyperplasia~~.~~
- **Evaluation prior to endovascular aneurysm repair (EVAR)**
- Imaging of the deep inferior epigastric arteries for surgical planning (breast reconstruction surgery) include CTA/MRA abdomen (ACR, 2017)
- Prior to uterine artery embolization for fibroids (Maciel, 2017)

Post-~~ ~~~~operative or post-procedural evaluation~~:~~

- ~~Evaluation for~~ **P**~~p~~ost-operative complications of renal transplant allograft (Bultman, 2014)
- ~~Evaluation of~~ **E**~~e~~ndovascular/ interventional vascular procedures for luminal patency versus restenosis due to conditions such as atherosclerosis, thromboembolism, and intimal hyperplasia~~.~~
- ~~Evaluation of~~ **P**~~p~~ost-operative complications, e.g., pseudoaneurysms~~,~~ related to surgical bypass grafts, vascular stents, and stent-grafts in the pelvis~~.~~
- Follow-up for post-endovascular repair (EVAR) or open repair of abdominal aortic aneurysm (AAA) and iliac artery aneurysms~~.~~
    - Routine, baseline study (post-op/intervention) is warranted within 1-3 months (Chaikof, 2018; Uberoi, 2011)~~.~~
    - Asymptomatic at six (6) month intervals, for one (1) year, then annually~~.~~
    - Symptomatic/complications related to stent graft – more frequent imaging may be needed~~.~~
- Follow-up study may be needed to help evaluate a patient's progress after treatment, procedure, intervention, or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.

Chest MRA, Abdomen MRA, or Abdomen/Pelvis MRA combo

- Acute aortic dissection (CTA or CT preferred)
- Takayasu's arteritis

- Marfan sydrome
- Loeys-Dietz syndrome
- **Spontaneous coronary artery dissection (SCAD)**
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- Vascular Ehlers-Danlos syndrome
- **Post-operative complications**
- **Significant post-traumatic or post-procedural vascular complications reasonably expected to involve the chest and/or abdomen and/or pelvis**

BACKGROUND

Magnetic resonance angiography (MRA) generates images of the arteries that can be evaluated for evidence of stenosis, occlusion, or aneurysms. It is used to evaluate the arteries of the abdominal aorta and the renal arteries. ~~Contrast~~ **Contrast** enhanced MRA requires the injection of a contrast agent which results in very high quality images. It does not use ionizing radiation, allowing MRA to be used for follow-up evaluations.

OVERVIEW

Bruits: Blowing vascular sounds heard over partially occluded blood vessels. Abdominal bruits may indicate partial obstruction of the aorta or other major arteries such as the renal, iliac, or femoral arteries. Associated risks include but are not limited to; renal artery stenosis, aortic aneurysm, atherosclerosis, AVM, or coarctation of aorta.

MRA and Chronic Mesenteric Ischemia – Contrast-enhanced MRA is used for the evaluation of chronic mesenteric ischemia, including treatment follow-up. Chronic mesenteric ischemia is usually caused by severe atherosclerotic disease of the mesenteric arteries, e.g., celiac axis, superior mesenteric artery, inferior mesenteric artery. At least two of the arteries are usually affected before the occurrence of symptoms such as abdominal pain after meals and weight loss. MRA is the technique of choice for the evaluation of chronic mesenteric ischemia in patients with impaired renal function.

MRA and Abdominal Aortic Aneurysm Repair – MRA may be performed before endovascular repair of an abdominal aortic aneurysm. Endovascular repair of abdominal aortic aneurysm is a minimally invasive alternative to open surgical repair, and its success depends on precise measurement of the dimensions of the aneurysm and vessels. This helps to determine selection of an appropriate stent-graft diameter and length to minimize complications, such as endoleakage. MRA provides images of the aorta and branches in multiple 3D projections and may help to determine the dimensions needed for placement of an endovascular aortic stent graft. MRA is noninvasive and rapid and may be used in patients with renal impairment.

MRI/CT and acute hemorrhage: MRI is not indicated and MRA/MRV (MR Angiography/Venography) is rarely indicated for evaluation of intraperitoneal or retroperitoneal hemorrhage, particularly in the acute setting. CT is the study of choice due to its availability, speed of the study, and less susceptibility to artifact from patient motion. Advances in technology have allowed conventional CT to not just detect hematomas but also the source of acute vascular extravasation. In special cases, finer vascular detail to assess the specific source vessel responsible for hemorrhage may require the use of CTA. CTA in the diagnosis of lower gastrointestinal bleeding is such an example (Clerc, 2017).

MRA/MRV is often utilized in non-acute situations to assess vascular structure involved in atherosclerotic disease and its complications, vasculitis, venous thrombosis, vascular congestion, or tumor invasion. Although some of these conditions may be associated with hemorrhage, it is usually not the primary reason why MRI/MRA/MRV is selected for the evaluation. A special condition where MRI may be superior to CT for evaluating hemorrhage is to detect an underlying neoplasm as the cause of bleeding (Abe, 2010).

POLICY HISTORY

Date	Summary
~~March~~ April 2021	• Updated for concordance w/ CTA abdomen/pelvis
May 2020	• Added suspected vascular cause of retroperitoneal hemorrhage or hematoma • Added pelvic congestion syndrome • Added for evaluation of diffuse unexplained LE edema with neg ultrasound • Added FMD, Ehlers-Danlo, Marfans, Loetz-Dietz • Added for surgical planning breast reconstruction Deep inferior epigastric arteries • Added prior to uterine artery embolization • Added indications for combo imaging
May 2019	• Modified the follow up for iliac aneurysm • Added 'chronic' to mesenteric ischemia indication; added acute mesenteric ischemia should be assessed with CTA unless contraindicated • Added indications for post-operative complications of renal transplant allograft; venous thrombus in inferior vena cava; suspected May-Thurner syndrome

~~**Review Date:** May 2019~~
~~**Review Summary:**~~
~~• Modified the follow up for iliac aneurysm~~

- ~~Added 'chronic' to mesenteric ischemia indication; added acute mesenteric ischemia should be assessed with CTA unless contraindicated~~
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- ~~Added for surgical planning breast reconstruction Deep inferior epigastric arteries~~
- ~~Added prior to uterine artery embolization~~
- ~~Added indications for combo imaging~~

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GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.