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2024 Magnetic Resonance Angiography/ Magnetic Resonance Venography (MRA/ MRV) Pelvis

Diagnostic Imaging

MRA-Pelvis-HH

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Table of Contents

Magnetic Resonance Angiography/Magnetic Resonance Venography (MRA/MRV) Pelvis

MRA Contraindications

An MRA may be contraindicated for **ANY** of the following:

- Safety, related to clinical status (eg, body mass index exceeds MR capability, intravascular stents within recent 6 weeks)
  References: [6] [32] [22] [17] [3]
- Safety, related to contrast (eg, allergy, renal impairment)
  References: [6] [32] [22] [17] [3]
- Safety, related to implanted devices (aneurysm clip, cochlear implant, insulin pump, spinal cord stimulator)
  References: [6] [32] [22] [17] [3]

IMPORTANT
Some implanted devices that were once absolute contraindications to a MRI, may now be accepted. Considerations include if the MRI is able to accommodate the device, or the device is deemed safe for MRI.

NCD 220.2
See also, **NCD 220.2**: Magnetic Resonance Imaging at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

Preamble: Pediatric Diagnostic Imaging

HealthHelp's clinical guidelines for the Diagnostic Imaging program, are intended to apply to both adults and pediatrics (21 years of age or younger), unless otherwise specified within the criteria.

MRA/MRV Pelvis Guideline

Magnetic resonance angiography/magnetic resonance venography (MRA/MRV) of the pelvis is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Large vessel disease (eg, arteriovenous malformation [AVM], dissection, fistulas, hematoma, hepatic vein stenosis, thrombosis) is known, localized to the abdomen, when ultrasound is non-diagnostic or indeterminate.
   References: [11] [10] [1] [2]
2. Mass, abdominal, with suspected vascular displacement or invasion
   References: [16] [31]
3. Peri-procedural and **EITHER** of the following:
   a. Peri-procedural care to guide invasive procedure planning **OR** post-procedural follow-up.
   b. Routine post-surgical follow-up endovascular repair (EVAR) or open repair of AAA *(****NOTE:*** *CTA or MRA is preferred unless known, documented contraindication. Recommended baseline study performed between 1 to 3 months following intervention, followed by annual imaging. If abnormalities are noted, 6-month follow-up may be warranted.)*

   References: [13]
4. Prior MRA pelvis imaging is non-diagnostic or indeterminate. (***NOTE**: *One follow-up is appropriate to evaluate for changes since preceding imaging finding[s]. Further surveillance is appropriate when lesion is specified as "highly suspicious" or there is a change since last exam.*)
5. Vascular disease, arterial, is suspected or known and **ANY** of the following:
   a. Aneurysm (eg, abdominal aorta, adnexal, iliac artery, mesenteric artery, renal artery, visceral) is suspected or known and **ANY** of the following: (***NOTE:** *CTA is preferred. MRA pelvis maybe ordered with MRA abdomen.)*
      i. Abdominal aortic aneurysm (AAA) is suspected or known and **EITHER** of the following:
         A. Asymptomatic **AND** ultrasound is non-diagnostic or indeterminate.
         B. Symptomatic (eg, recent-onset of abdominal or back pain, particularly in presence of pulsatile or epigastric mass, suspected dissection or risk factors for AAA)
      ii. Aneurysm, iliac, for surveillance imaging when ultrasound is non-diagnostic or indeterminate **AND CTA is contraindicated or unavailable**, as follows:
         A. 2.0 cm to 2.9 cm; every 3 years
         B. 3.0 cm to 3.4 cm; annually

C. Greater than 3.4 cm; every 6 months

iii. Aneurysm is known, and complications are suspected (eg, recent-onset of abdominal or back pain, particularly in presence of pulsatile or epigastric mass, suspected dissection or risk factors for AAA)

b. Vascular abnormality risk is increased and **ANY** of the following:

i. Ehlers-Danlos, vascular, or Marfan syndrome: one-time study of the abdomen and pelvis

ii. Fibromuscular dysplasia: one-time vascular study of the abdomen and pelvis

iii. Loeys-Dietz syndrome: imaging at diagnosis and then every 2 years, more frequently if abnormalities are found

c. Vascular abnormalities are visualized on prior imaging and **ANY** of the following:

i. Prior imaging is non-diagnostic or indeterminate.

ii. Spontaneous coronary artery dissection (SCAD) assessment

iii. Visceral vascular conditions (eg, aneurysm, arteriovenous malformations, compression syndromes, dissection, fistulas) are known, for follow-up. (*__NOTE__: *Hepatic vascular abnormalities after ultrasound is completed*.)

d. Vascular ischemia or hemorrhage and **EITHER** of the following:

i. Mesenteric ischemia/ischemic colitis is suspected or known **AND CTA is contraindicated or unavailable**.

ii. Retroperitoneal hematoma or hemorrhage is known, to determine vascular source when CT is non-diagnostic or indeterminate **AND CTA is contraindicated or unavailable**.

References: [18] [19] [33] [31] [8] [13] [9] [15] [29] [28] [14]

6. Vascular disease, venous, is suspected or known and **ANY** of the following:

a. Edema of lower extremities (typically asymmetric or unilateral) is diffuse and unexplained, **AND** ultrasound is non-diagnostic or indeterminate.

b. May-Thurner syndrome (iliac compression syndrome) is suspected or known.

c. Pelvic vascular disease **OR** pelvic congestion syndrome is suspected, and ultrasound is non-diagnostic or indeterminate.

d. Thrombosis, venous, is suspected or known and **EITHER** of the following:

i. Inferior vena cava thrombosis evaluation

ii. Prior imaging is non-diagnostic or indeterminate.

References: [7] [26] [27] [4]

Combination MRA Chest, MRA Abdomen and/or MRA Pelvis

Magnetic resonance angiography (MRA) of the chest combined with MRA of the abdomen and/or pelvis are considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Acute aortic syndrome is suspected.
   References: [19] [5]
2. Arterial occlusion is known in the mesenteric or renal system or multiple organ systems, embolic source is suspected, to evaluate for embolic source.
   Reference: [25]
3. Connective tissue disease (eg, Loeys Dietz, Marfan's syndrome, vascular Ehlers-Danlos syndrome)
   References: [30] [24] [20]
4. Lower extremity vascular disease is known, echocardiogram is completed, to evaluate for embolic source.
   Reference: [25]
5. Spontaneous coronary artery dissection (SCAD)
   References: [19] [5]
6. Takayasu's arteritis
   References: [2] [23]
7. Transcatheter aortic valve replacement (TAVR) for pre-operative or pre-procedural planning
   Reference: [21]
8. Vascular complications are post-traumatic, post-procedural or post-operative.
9. Vascular disease involving the chest and abdominal cavities is extensive (eg, intestinal ischemic syndrome, thoracic outlet syndrome), for evaluation.

LCD 34372
See also, **LCD 34372**: Magnetic Resonance Angiography (MRA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 33633
See also, **LCD 33633**: Magnetic Resonance Angiography (MRA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 34865
See also, **LCD 34865**: Magnetic Resonance Angiography (MRA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

MRA/MRV Pelvis Procedure Codes

Table 1. MRA Pelvis Associated Procedure Codes

CODE	DESCRIPTION
72198	Magnetic resonance angiography, pelvis, with or without contrast material(s)
C8918	Magnetic resonance angiography with contrast, pelvis
C8919	Magnetic resonance angiography without contrast, pelvis
C8920	Magnetic resonance angiography without contrast followed by with contrast, pelvis

MRA/MRV Pelvis Summary of Changes

MRA/MRV Pelvis guideline had the following version changes from 2023 to 2024:

- Added the following to keep in line with current research:
  - "AAA is suspected or known" under "Aneurysm is suspected or known"
  - "Prior imaging is non-diagnostic"
  - "SCAD" indication
  - "Vascular abnormality risk"
  - "Vascular abnormalities visualized" indication
- Removed the following indications as current research no longer supports them:
  - "Symptom" indication and its children
- Mid-cycle update: added Pediatric Preamble

MRA/MRV Pelvis Definitions

Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
Aortic dissection is a serious condition in which the integrity of the body's main artery (aorta) is compromised and blood passes through the inner lining and between the layers of the arterial wall.
Aortic dissection types:

- **Type A** is the most common and dangerous type involves a tear in the part of the aorta where it exits the heart. The tear may also occur in the upper aorta (ascending aorta), which may extend into the abdomen.
- **Type B** involves a tear in the lower aorta only (descending aorta), which may also extend into the abdomen

Arteriovenous fistula (AVF) is an abnormal connection between an artery and a vein. It happens when one or more arteries are directly connected to one or more veins or venous spaces called sinuses.
Arteriovenous malformation (AVM) is a tangle of abnormal blood vessels connecting arteries and veins.
Colitis is a chronic digestive disease that causes inflammation of the large intestine, or colon.
Compression is reducing in size, quantity or volume, as if by squeezing.
Computed tomography angiography (CTA) is a medical test that combines a computed tomography (CT) scan with an injection of a special dye to produce pictures of blood vessels and tissues in a part of the body.
Dissection is the abnormal and usually abrupt formation of a tear or separation of the layers inside the wall of an artery.
Edema an abnormal infiltration and excess accumulation of serous fluid in connective tissue or in a serous cavity.
Ehlers-Danlos syndrome is a group of hereditary connective tissue disorders that manifests clinically with skin hyperelasticity, hypermobility of joints, atrophic scarring, and fragility of blood vessels.
Endovascular aneurysm repair (EVAR) is a minimally invasive procedure that treats abdominal aortic aneurysms (AAAs). The procedure involves placing a stent-graft within the aorta to reduce the risk of rupture.
Fibromuscular dysplasia is a rare blood vessel disorder that causes arteries to narrow and grow larger. FMD occurs when the strong, flexible cells in arteries are replaced with less strong, less flexible cells. This makes the arteries stiffer and more likely to be damaged.
Fistula is an abnormal connection that leads from an abscess, hollow organ or part to the body surface, or from one hollow organ or part to another, and may be surgically created to permit passage of fluids or secretions.

Hematoma is a mass of usually clotted blood that forms in a tissue, organ or body space as a result of a broken blood vessel.
Hemorrhage is a copious or heavy discharge of blood from the blood vessels.
Iliac vein compression syndrome (May-Thurner syndrome) is a clinical syndrome of unilateral lower extremity swelling and pain due to venous hypertension caused by an iliac artery compressing an overlying iliac vein.
Indeterminate findings are inconclusive or insufficient for treatment planning.
Intestinal ischemic syndrome occurs when the intestines don't get enough blood flow. It's caused by visceral artery disease, which is the narrowing of the arteries that supply blood to the intestines, spleen, and liver. This narrowing is caused by atherosclerosis, which is the hardening of arteries due to plaque or fatty deposits building up on the artery wall.
Ischemia is a deficient supply of blood to a body part (such as the heart or brain) due to obstruction of the inflow of arterial blood.
Loeys-Dietz syndrome is a disorder that affects the connective tissues of the body and increases the risk of aneurysm in arteries such as the aorta.
Magnetic resonance angiogram (MRA) is a test that uses a magnetic field and pulses of radio wave energy to provide images of blood vessels inside the body, allowing for evaluation of blood flow and blood vessel wall condition. MRA is used to look for aneurysms, clots, tears in the aorta, arteriovenous malformations and stenosis caused by plaque in the carotid arteries (neck) or blood vessels leading to the lungs, kidneys or legs.
Magnetic resonance venogram (MRV) is a diagnostic procedure that uses a combination of a large magnet, radiofrequencies, and a computer to produce detailed images of organs and structures within the body. An MRV uses magnetic resonance technology and intravenous (IV) contrast dye to visualize the veins. Contrast dye causes the blood vessels to appear opaque on the X-ray image, allowing the visualization the blood vessels being evaluated. MRV is useful in some cases because it can help detect causes of leg pain other than vein problems.
Marfan syndrome is a disorder of connective tissue inherited as a dominant trait, characterized by abnormal elongation of the long bones and often with ocular and circulatory defects.
May-Thurner syndrome (iliac vein compression syndrome) is a clinical syndrome of unilateral lower extremity swelling and pain due to venous hypertension caused by an iliac artery compressing an overlying iliac vein.
Mesenteric is a fold of membrane that attaches the intestine to the abdominal wall and holds it in place.
Non-diagnostic is a result that does not lead to a confirmed diagnosis.
Pediatric approximate ages are defined by the US Department of Health (USDH), the Food and Drug Administration (FDA), and the American Academy of Pediatrics (AAP) as the following:

- Infancy, between birth and 2 years of age
- Childhood, from 2 to 12 years of age

- Adolescence, from 12 to 21 years of age, further defined by the AAP into:
    1. Early (ages 11–14 years)
    2. Middle (ages 15–17 years),
    3. Late (ages 18–21 years)
    4. Older ages may be appropriate for children with special healthcare needs.

Pelvic congestion syndrome occurs when varicose veins develop around the ovaries, similar to varicose veins that occur in the legs. The valves in the veins no longer function normally, which causes blood to back up. The veins become engorged or "congested", which can be very painful.
Retroperitoneal describes the area behind the smooth transparent serous membrane that lines the cavity of the abdomen.
Retroperitoneal bleed occurs when blood enters into space immediately behind the posterior reflection of the abdominal peritoneum. The organs of this space include the esophagus, aorta, inferior vena cava, kidneys, ureters, adrenals, rectum, parts of the duodenum, parts of the pancreas, and parts of the colon.
Stenosis is a narrowing or constriction of the diameter of a bodily passage or orifice.
Surveillance in cancer is the ongoing, timely and systematic collection and analysis of information on new cancer cases, extent of disease, screening tests, treatment, survival and cancer deaths.
Takayasu's arteritis is a chronic inflammatory disease especially of the aorta and its major branches (the brachiocephalic artery and left common carotid artery) that result in progressive stenosis, occlusion and aneurysm formation marked by diminution or loss of the pulse (as in the arm) and ischemic symptoms.
Thoracic outlet syndrome is a term that refers to three related syndromes involving compression of the nerves, arteries, and veins in the lower neck and upper chest area. This compression causes pain in the arm, shoulder, and neck.
Thrombosis is the formation of a blood clot (partial or complete blockage) within blood vessels, whether venous or arterial, limiting the natural flow of blood and resulting in clinical sequela.
Transcatheter Aortic Valve Implantation/Replacement (TAVI/TAVR) is a minimally invasive procedure that replaces a diseased aortic valve with a man-made or animal tissue valve. TAVR is for patients with severe aortic stenosis, which is a narrowing of the valve opening. The procedure only requires a small cut in the skin and does not require open-heart surgery.
Ultrasound is the diagnostic or therapeutic use of ultrasound and especially a noninvasive technique involving the formation of a two-dimensional image used for the examination and measurement of internal body structures and the detection of bodily abnormalities.

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