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2024 Computed Tomography Angiography (CTA) Pelvis

Diagnostic Imaging

CTA-Pelvis-HH

Last Review Date: 10/28/2024
Previous Review Date: 06/23/2024
Guideline Initiated: 06/30/2019

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Table of Contents

Computed Tomography Angiography/Computed Tomography Venography (CTA/CTV) Pelvis

NCD 220.1
See also, **NCD 220.1**: Computed Tomography at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

CTA General Contraindications

Computed tomography angiography (CTA) is contraindicated for **ANY** of the following: [2] [4] [19]

- Contrast allergy
- Heart failure is decompensated.
- Hemodynamic instability (eg, abnormal laboratory values, blood pressure instability)
- Renal impairment (glomerular filtration rate is 30 mL/min/1.73m^2)
- Protocol can **NOT** be followed (eg, technical or related to individual).

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.

CTA/CTV Pelvis Guideline

Computed tomography angiography/computed tomography venography (CTA/CTV) of the pelvis is considered medically appropriate when the documentation demonstrates **ANY** of the following conditions:

1. Arterial disease, limited to the pelvis, is suspected or known and **ANY** of the following:
    a. Aneurysm is suspected or known, for evaluating pelvic extent of an aortic aneurysm and **ANY** of the following: [6] [18]
        i. Anatomy that is complex is known.
        ii. Aneurysm is suspected or known **AND** ultrasound is non-diagnostic or indeterminate.
        iii. Aneurysm is known and complications are suspected (eg, new onset abdominal pain).

iv. Aneurysm is known, ultrasound is non-diagnostic or indeterminate, for surveillance with **ANY** of the following:

A. 2.0 cm to 2.9 cm; follow-up every 3 years

B. 3.0 cm to 3.5 cm; follow-up annually

C. Greater than 3.5 cm; follow-up at least every 6 months

b. Erectile dysfunction (ED) evaluation when vascular cause is suspected **AND** ultrasound is non-diagnostic or indeterminate. [17] [13]

c. Iliac vascular condition (eg, aneurysm, arteriovenous malformations [AVM], compression syndromes, dissection, fistulas, intramural hematoma, vasculitis) is known AND ultrasound is non-diagnostic or indeterminate. [6]

d. Ischemia or hemorrhage, limited to the pelvis, is suspected or known. (*__NOTE__: *Needs to be resubmitted as CTA abdomen and pelvis unless there is a specific finding limited to the pelvis*.)

e. Tumor-related vascular invasion or displacement evaluation

f. Vascular abnormalities, limited to the pelvis, are suspected or known. [15] [1]

g. Visceral vascular condition (eg, aneurysm, arteriovenous malformations [AVM], compression syndromes, dissection, fistulas, intramural hematoma, vasculitis) is known, for follow-up. [5] [6]

2. Peri-procedural for pelvic intervention, for **ANY** of the following:

a. Pre-procedure evaluation for **ANY** of the following: [6]

i. Epigastric arteries, deep inferior, evaluation for surgical planning [16]

ii. Pre-procedure planning for scheduled elective pelvic intervention.

iii. Transplant of solid organ (eg, kidney, liver) planning

iv. Uterine artery embolization for fibroids planning (*__NOTE__: *magnetic resonance angiography [MRA] preferred*)

v. Vascular interventional procedure planning for luminal patency versus restenosis due to conditions such as atherosclerosis, intimal hyperplasia and thromboembolism.

b. Post-procedure evaluation for **ANY** of the following: [6]

i. Abdominal vascular, endovascular or interventional procedures, to evaluate luminal patency versus restenosis and operative follow-up.

ii. Complications (eg, pseudoaneurysms, related to surgical bypass grafts or vascular stents) of surgery or renal transplant allograft are suspected.

iii. Endovascular repair (EVAR) or open repair of abdominal aortic aneurysm (AAA), for post-procedural follow-up **OR** evaluation of the abdominal extent of iliac artery aneurysms.

3. Prior CTA 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.*)
4. Venous disease, limited to the pelvis, is suspected or known and **ANY** of the following:
    a. Edema of the lower extremity is diffuse and unexplained **AND** ultrasound is non-diagnostic or indeterminate. [3]
    b. May-Thurner syndrome (iliac vein compression syndrome) is suspected. [7]
    c. Pelvic vascular disease or pelvic congestion syndrome is suspected **AND** ultrasound is non-diagnostic or indeterminate. [14]
    d. Tumor-related vascular invasion or displacement evaluation
    e. Venous thrombosis, of iliac vein, is suspected or known and **EITHER** of the following: [9]
        i. Suspected and prior imaging (eg, ultrasound) is non-diagnostic or indeterminate.
        ii. Venous thrombosis of the vena cava is known, for futher evaluation.

Combination CTA Chest/CTA Abdomen/CTA Pelvis Guideline

Computed tomography angiography (CTA) chest **combined** with CTA abdomen and CTA pelvis is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Connective tissue disease (eg, Loeys Dietz, Marfan's syndrome, vascular Ehlers-Danlos syndrome)
2. Spontaneous coronary artery dissection (SCAD) [11]
3. Takayasu's arteritis [12]
4. Transcatheter aortic valve replacement (TAVR) for pre-operative or pre-procedural planning [8]
5. Vascular complications are post-traumatic, post-procedural or post-operative.
6. Vascular disease involving the chest and abdominal cavities is extensive (eg, intestinal ischemic syndrome, thoracic outlet syndrome), for evaluation.

CTA/CTV Pelvis APC Codes

Table 1. CTA Pelvis APC Codes

Codes	Description
72191	Computed tomographic angiography, pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing

CTA Pelvis Summary of Changes

CTA Pelvis guideline had the following version changes from 2023 to 2024:

- Added the following to keep in line with current research:
  - "Edema of the lower extremity" under "Venous Disease"
  - "Prior imaging is non-diagnostic or indeterminate"
  - "Transplant of solid organ" under "Pre-procedural"
  - Under "Arterial disease"
    - "Iliac vascular condition"
    - "Ischemia or hemorrhage"
    - "Visceral vascular condition"
- Removed the following as the indication is not supported by research:
  - Under "Arterial disease"
    - "Hematoma/hemorrhage"
    - "Large vessel disease"
    - "Mesenteric ischemia"
  - Under "Vascular related conditions"
    - "Connective tissue diseases"
    - "Fibromuscular dysplasia"
    - "Hemorrhage that is lower gastrointestinal"
- Mid-cycle update: added Pediatric Preamble

CTA/CTV Pelvis Definition section

Allograft is tissue that is transplanted from one person to another.

Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
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.
Atherosclerosis is a common condition that develops when a sticky substance called plaque builds up inside your arteries.
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.
Computed tomography venography (CTV) is a technique targeted to assess venous anatomy, determine venous patency and delineate collateral circulation, often using contrast matierial.
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.
Embolism is an obstruction of an artery, typically by a clot of blood or an air bubble.
Embolization is a procedure that uses particles, such as tiny gelatin sponges or beads, to block a blood vessel. Embolization may be used to stop bleeding or to block the flow of blood to a tumor or abnormal area of tissue.
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.
Erectile dysfunction is defined as the persistent inability to achieve or maintain penile erection sufficient for satisfactory sexual performance.
Fibroids are growths made of smooth muscle cells and fibrous connective tissue. These growths develop in the uterus and appear alone or in groups. They range in size, from as small as a grain of rice to as big as a melon. In some cases, fibroids can grow into the uterine cavity or outward from the uterus on stalks.
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.

Hemodynamic stability is the term used to describe stable blood flow. When it is said that someone is hemodynamically stable, it means the blood pressure and heart rate of that person are stable or not changing.

Table 1. Hemodynamic Assessment

Hemodynamic Parameters	Stable Circulation	Compensated Shock	Hypotensive Shock
Conscious Level	Clear and lucid	Clear and lucid	Restless, combative
Capillary refill	Brisk (less than 2 seconds)	Prolonged (greater than 2 seconds)	Very prolonged, mottled skin
Extremities	Warm and pink	Cool peripheries	Cold, clammy
Peripheral pulse	Good volume	Weak and thready	Feeble or absent
Heart Rate	Normal heart rate for age	Tachycardia for age	Severe tachycardia or bradycardia in late shock
Blood Pressure	Normal blood pressure and pulse pressure for age	Normal systolic pressure but rising diastolic pressure; Narrowing pulse pressure; Postural hypertension	Narrow pulse pressure (greater than or equal to 20 mm/Hg; Hypotension for age; Unrecordable blood pressure
Respiratory Rate	Normal respiratory rate for age	Tachypnea	Hyerpnea or Kussmaul's breathing (metabolic acidosis)
Urine Output	Normal	Reducing trend	Oliguria or anuria

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.

Intimal hyperplasia is an abnormal accumulation of cells in the vascular tunica intima; the cell number is increased because of proliferation and/or migration of vascular wall cells, predominantly smooth muscle cells, often in response to a traumatic stimulus.

Intramural hematoma (IMH) is a life-threatening aortic disease that occurs when blood leaks through the innermost layer of the aortic wall. The blood flows between the inner and outer walls of the aorta, but it doesn't happen because of a tear in the 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.

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.

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.

Pseudoaneurysm, also called a false aneurysm, is a leakage of blood from an artery into the surrounding tissue. It occurs when there is a breach in the arterial wall.

Retroperitoneal describes the area behind the smooth transparent serous membrane that lines the cavity of the abdomen.

Spontaneous coronary artery dissection (SCAD) is a tear in the wall of a coronary artery. It's an emergency condition that can slow or block blood flow to the heart. This can lead to a heart attack, heart rhythm problems, or sudden death.

Stenosis is a narrowing or constriction of the diameter of a bodily passage or orifice.

Stent is a small, narrow tube made of metal or plastic that is inserted into a hollow structure in the body to keep a passageway open.

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.

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.

Vasculitis involves inflammation of the blood vessels. The inflammation can cause the walls of the blood vessels to thicken, which reduces the width of the passageway through the vessel. If blood flow is restricted, it can result in organ and tissue damage.

Visceral artery is the major artery that supply the intestines, spleen and liver.

CTA/CTV Pelvis References

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