

*National Imaging Associates, Inc.	
Clinical guidelines ABDOMEN CTA (Angiography)	Original Date: September 1997
CPT Codes: 74175	Last Revised Date: March 2023
Guideline Number: NIA_CG_034-1	Implementation Date: January 2024

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.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines and state/national recommendations.*

IMPORTANT NOTE

When vascular imaging of the aorta and both legs, i.e., CTA aortogram and runoff is desired (sometimes incorrectly requested as Abd/Pelvis CTA & Lower Extremity CTA Runoff), only one authorization request is required, using CPT Code 75635 Abdominal Arteries CTA. This study provides for imaging of the abdomen, pelvis, and both legs. The CPT code description is CTA aorto-iliofemoral runoff; abdominal aorta and bilateral ilio-femoral lower extremity runoff.

When separate requests for CTA abdomen and CTA Pelvis are encountered for processes involving both the abdomen and pelvis (but do NOT need to include legs/runoff), they need to be resubmitted as a single Abdomen/Pelvis CTA, using CPT 74174 (to avoid unbundling). Otherwise, the exam should be limited to the appropriate area (i.e., Abdomen OR Pelvis) that includes the area of concern.

INDICATIONS FOR ABDOMEN CT ANGIOGRAPHY/CT VENOGRAPHY (CTA/CTV)

For evaluation of known or suspected abdominal vascular disease

Arterial Disease

Abdominal Aortic Aneurysm (AAA) (should be CTA Abdomen and Pelvis if known or suspected aneurysm extends to the pelvis):

- For **asymptomatic** known or suspected abdominal aortic aneurysms, ultrasound should be done prior to advanced imaging. Only when the ultrasound is inconclusive, is advanced imaging with CT or MRI needed
- For **symptomatic** known or suspected AAA (such as recent-onset abdominal pain or back pain, particularly in the presence of a pulsatile or epigastric mass, suspected dissection, or significant risk factors for AAA) CTA/MRA is appropriate and generally preferred over CT/MRI. (If contrast is contraindicated or other clinical indications for abdomen and/or pelvic imaging are present, then CT/MR may be approved rather than CTA/MRA)
- If there is known complex anatomy, CTA/MRA may be needed.

Other vascular abnormalities seen on prior imaging studies:

- Initial evaluation of inconclusive vascular findings on prior imaging
- Follow-up of known visceral vascular conditions (such as aneurysm, dissection, compression syndromes, arteriovenous malformations (AVMs), fistulas, intramural hematoma, and vasculitis) (if pelvis is also needed, resubmit as CTA Abdomen and Pelvis)
 - Hepatic vascular abnormalities after ultrasound has been performed to clarify or further evaluate findings
- For assessment in patients with spontaneous coronary artery dissection (SCAD), can be done at time of coronary angiography (resubmit as CTA Abdomen and Pelvis if pelvis is needed)¹
- Vascular invasion or displacement by tumor (conventional CT or MRI also appropriate)²
- For known large vessel diseases (inferior vena cava, superior/inferior mesenteric, celiac, splenic or renal arteries/veins), e.g., aneurysm/dissection (non-aortic disease), arteriovenous malformations (AVMs), and fistulas, intramural hematoma, and vasculitis³⁻⁵
- Surveillance may be done with ultrasound at intervals similar to AAA, however, CTA/MRA rather than CT/MRI may be needed for non-aortic disease when ultrasound is inconclusive⁶

Vascular ischemia or hemorrhage (needs to be resubmitted as CTA Abdomen and Pelvis unless there is a specific finding limited to the abdomen)

For patients at increased risk for vascular abnormalities (CTA or MRA): (needs to be resubmitted as CTA Abdomen and Pelvis unless there is a specific finding limited to the abdomen)

For evaluation of known or suspected renal artery stenosis or resistant hypertension in the setting of normal renal function (with impaired renal function, eGFR <30, use US with Doppler) unrelated to recent medication demonstrated by any of the following^{2, 7-13}:

- Unsuccessful control after treatment with 3 or more (>2) anti-hypertensive medication at optimal dosing and one should be a diuretic
- Acute elevation of creatinine after initiation of an angiotensin converting enzyme inhibitor (ACE inhibitor) or angiotensin receptor blocker (ARB)
- Asymmetric kidney size noted on ultrasound

- Onset of hypertension in a person younger than age 30 without any other risk factors or family history of [hypertension](#)
- Significant hypertension (diastolic blood pressure > 110 mm Hg) in a young adult (i.e., younger than 35 years) suggestive of fibromuscular dysplasia¹⁴
- Diagnosis of a syndrome with a higher risk of vascular disease, such as neurofibromatosis, tuberous sclerosis, and Williams' syndrome
- New onset of hypertension after age 50
- Acute rise in blood pressure in a person with previously stable blood pressures
- Flash pulmonary edema without identifiable causes
- Malignant or accelerated hypertension
- Bruit heard over renal artery and hypertension
- Abnormal/inconclusive renal doppler ultrasound

Venous Disease

- Suspected renal vein thrombosis in patient with known renal mass or from other causes¹⁵
- Venous thrombosis if previous studies have not resulted in a clear diagnosis and limited to the abdomen
- Vascular invasion or displacement by tumor in the abdomen
- For evaluation of portal venous system (hepatic portal system) after doppler ultrasound has been performed
- For unexplained lower extremity edema (typically unilateral or asymmetric) with negative or inconclusive ultrasound¹⁶

Pre-operative evaluation

- For evaluation of transjugular intrahepatic portosystemic shunt (TIPS) when Doppler ultrasound indicates suspected complications¹⁷⁻²⁰
- Evaluation prior to interventional vascular procedures for luminal patency versus restenosis due to conditions such as atherosclerosis, thromboembolism, and intimal hyperplasia
- Prior to solid organ transplantation when vascular anatomy is needed
- For surgical planning for UPJ (ureteropelvic junction) obstruction to look for a lower pole crossing vessel
- Planning prior Y90 radiation treatment for liver cancer in order to evaluate anatomic variation/shunts/determine best catheter placement/see if coil(s) needed²¹

Post-operative or post-procedural evaluation

- Evaluation of endovascular/interventional abdominal vascular procedures for luminal patency versus restenosis due to conditions such as atherosclerosis, thromboembolism, and intimal hyperplasia
- Evaluation of post-operative complications, e.g., pseudoaneurysms related to surgical bypass grafts, vascular stents, and stent-grafts in the peritoneal cavity

- Follow-up for post-endovascular repair (EVAR) or open repair of abdominal aortic aneurysm (AAA) or abdominal extent of iliac artery aneurysms typically needs to include pelvic imaging, therefore Abdomen Pelvis CT/CTA/MRA would usually be the appropriate study.

Other Vascular indications

- For evaluation of hepatic blood vessel abnormalities (aneurysm, hepatic vein thrombosis, stenosis post-transplant) after doppler ultrasound has been performed; to clarify or further evaluate ultrasound findings

Other Indications

Further evaluation of indeterminate findings on prior imaging (unless follow up is otherwise specified within the guideline):

- For initial evaluation of an inconclusive finding on a prior imaging report that requires further clarification
- One follow-up exam of a prior indeterminate MR/CT finding to ensure no suspicious interval change has occurred. (No further surveillance unless specified as highly suspicious or change was found on last follow-up exam)

Chest CTA/Abdomen CTA combo

- For evaluation of extensive vascular disease involving the chest and abdominal cavities and pelvic imaging is not needed
- For pre-op or preprocedural evaluation for Transcatheter Aortic Valve Replacement (TAVR)^{22, 23}
- Post-op complications^{24, 25} and pelvic imaging is not needed
- Significant post-traumatic or post-procedural vascular complications and pelvic imaging is not needed

BACKGROUND

Computed tomography angiography (CTA) 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. CTA uses ionizing radiation and requires the administration of iodinated contrast agent, which is a potential hazard in patients with impaired renal function. Abdominal CTA is not used as a screening tool, e.g., evaluation of asymptomatic patients without a previous diagnosis.

Cross-sectional imaging (liver ultrasound with Doppler, CT or MRI) should be completed no more than a month prior to the transjugular intrahepatic portosystemic shunt (TIPS) to assess for vascular patency and look for hepatic masses or other problems that could complicate the procedure.

Post-procedure, an ultrasound of the liver is conducted a day after to assess shunt patency. Hepatic encephalopathy (HE) is the most common complication and usually occurs 2-3 weeks after insertion of

TIPS. Unique complications may include intravascular hemolysis and infection of the shunt. Other complications can include capsule puncture, intraperitoneal bleed, hepatic infarction, fistula, hematuria, thrombosis of stent, occlusion, or stent migration and may require cross-sectional imaging.

Follow-up and maintenance imaging if complications suspected include Doppler ultrasound to assess shunt velocity. If asymptomatic sonogram performed at 4 weeks post placement, then every 6 months to a year. The gold standard for shunt patency is portal venography, usually reserved if concern for shunt occlusion.

OVERVIEW

CTA and Renal Artery Stenosis: Renal artery stenosis is the major cause of secondary hypertension. It may also cause renal insufficiency and end-stage renal disease. Atherosclerosis is one of the common causes of this condition, especially in older patients with multiple cardiovascular risk factors and worsening hypertension or deterioration of renal function. CTA is used to evaluate the renal arteries and detect renal artery stenosis.

NF1 may present with hypertension due to renal artery stenosis in children. All young patients (<30 year) with hypertension should be clinically screened for secondary causes of hypertension, including NF1, so that renal revascularization can be offered before permanent end organ damage has occurred.²⁶

Abdominal Aneurysms and general guidelines for follow-up: The normal diameter of the suprarenal abdominal aorta is 3.0 cm and that of the infrarenal is 2.0 cm. Aneurysmal dilatation of the infrarenal aorta is defined as diameter ≥ 3.0 cm or dilatation of the aorta ≥ 1.5 x the normal diameter.²⁷ Evaluation of AAA can be accurately made by **ultrasound**. Ultrasound can detect and size AAA, with the advantage of being relatively inexpensive, noninvasive, and not requiring iodinate contrast. The limitations are that overlying bowel gas can obscure findings and the technique is operator dependent. CT is used when US is inconclusive or insufficient. When there are suspected complications, complex anatomy and/or surgery is planned, CTA/MRA is preferred.

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 usually 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 diagnosis of lower gastrointestinal bleeding is such an example.²⁸

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.²⁹

REFERENCES

1. Crousillat DR, Wood MJ. Spontaneous Coronary Artery Dissection: An Update for the Interventionalist. HMP Global Learning Network. Updated March 2020. Accessed November 19, 2022. <https://www.hmpgloballearningnetwork.com/site/cathlab/content/spontaneous-coronary-artery-dissection-update-interventionalist>
2. Akbeyaz IH, Tirosh A, Robinson C, et al. Spontaneously Resolving Hyperreninemic Hypertension Caused by Accessory Renal Artery Stenosis in a 13-Year-Old Girl: A Case Report. *J Clin Hypertens (Greenwich)*. Jan 2017;19(1):100-102. doi:10.1111/jch.12893
3. Ibrahim F, Dunn J, Rundback J, Pellerito J, Galmer A. Visceral Artery Aneurysms: Diagnosis, Surveillance, and Treatment. *Curr Treat Options Cardiovasc Med*. Oct 26 2018;20(12):97. doi:10.1007/s11936-018-0696-x
4. Juntermanns B, Bernheim J, Karaindros K, Walensi M, Hoffmann JN. Visceral artery aneurysms. *Gefasschirurgie*. 2018;23(Suppl 1):19-22. doi:10.1007/s00772-018-0384-x
5. Ioannou P, Alexakis G. Spontaneous Retroperitoneal Bleeding in a Patient with Primary Antiphospholipid Syndrome on Aspirin. *Case Rep Emerg Med*. 2018;2018:4397893. doi:10.1155/2018/4397893
6. Wanhainen A, Verzini F, Van Herzele I, et al. Editor's Choice - European Society for Vascular Surgery (ESVS) 2019 Clinical Practice Guidelines on the Management of Abdominal Aorto-iliac Artery Aneurysms. *Eur J Vasc Endovasc Surg*. Jan 2019;57(1):8-93. doi:10.1016/j.ejvs.2018.09.020
7. Bailey SR, Beckman JA, Dao TD, et al. ACC/AHA/SCAI/SIR/SVM 2018 Appropriate Use Criteria for Peripheral Artery Intervention: A Report of the American College of Cardiology Appropriate Use Criteria Task Force, American Heart Association, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, and Society for Vascular Medicine. *J Am Coll Cardiol*. Jan 22 2019;73(2):214-237. doi:10.1016/j.jacc.2018.10.002
8. Gulas E, Wysiadeci G, Szymański J, et al. Morphological and clinical aspects of the occurrence of accessory (multiple) renal arteries. *Arch Med Sci*. Mar 2018;14(2):442-453. doi:10.5114/aoms.2015.55203
9. Hartman RP, Kawashima A. Radiologic evaluation of suspected renovascular hypertension. *Am Fam Physician*. Aug 1 2009;80(3):273-9.
10. Harvin HJ, Verma N, Nikolaidis P, et al. ACR Appropriateness Criteria(®) Renovascular Hypertension. *J Am Coll Radiol*. Nov 2017;14(11s):S540-s549. doi:10.1016/j.jacr.2017.08.040
11. Ali Mohammed AM, Elseed Abdalrasol RG, Alamin Abdalhai K, Gomaa Hamad M. Accessory renal vessels. *Acta Inform Med*. Sep 2012;20(3):196-7. doi:10.5455/aim.2012.20.196-197
12. Tullus K, Roebuck DJ, McLaren CA, Marks SD. Imaging in the evaluation of renovascular disease. *Pediatr Nephrol*. Jun 2010;25(6):1049-56. doi:10.1007/s00467-009-1320-9
13. Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension*. Jun 2018;71(6):e13-e115. doi:10.1161/hyp.0000000000000065

14. Kong W, Hu Z. Unique imaging findings in fibromuscular dysplasia of renal arteries: A case report. *Medicine (Baltimore)*. Nov 2018;97(46):e12815. doi:10.1097/md.00000000000012815
15. Mazhar HR, Aeddula NR. Renal Vein Thrombosis. *StatPearls*. StatPearls Publishing Copyright © 2021, StatPearls Publishing LLC.; 2021.
16. Hoshino Y, Machida M, Shimano Si, et al. Unilateral Leg Swelling: Differential Diagnostic Issue Other than Deep Vein Thrombosis. *Journal of General and Family Medicine*. 2016;17(4):311-314.
17. Darcy M. Evaluation and management of transjugular intrahepatic portosystemic shunts. *AJR Am J Roentgenol*. Oct 2012;199(4):730-6. doi:10.2214/ajr.12.9060
18. Dariushnia SR, Haskal ZJ, Midia M, et al. Quality Improvement Guidelines for Transjugular Intrahepatic Portosystemic Shunts. *J Vasc Interv Radiol*. Jan 2016;27(1):1-7. doi:10.1016/j.jvir.2015.09.018
19. Farsad K, Kolbeck KJ. Clinical and radiologic evaluation of patients before TIPS creation. *AJR Am J Roentgenol*. Oct 2014;203(4):739-45. doi:10.2214/ajr.14.12999
20. Raissi D, Roney EA, Issa MM, Sanampudi S, Winkler MA. Early TIPS failure in association with left mesenterico-gonadal spontaneous portosystemic venous shunt; a case report. *Clin Imaging*. Jan-Feb 2019;53:200-203. doi:10.1016/j.clinimag.2018.10.023
21. Kim SP, Cohalan C, Kopek N, Enger SA. A guide to (90)Y radioembolization and its dosimetry. *Phys Med*. Dec 2019;68:132-145. doi:10.1016/j.ejmp.2019.09.236
22. American College of Radiology. ACR Appropriateness Criteria® Imaging for Transcatheter Aortic Valve Replacement. American College of Radiology. Updated 2017. Accessed November 20, 2022. <https://acsearch.acr.org/docs/3082594/Narrative/>
23. Achenbach S, Delgado V, Hausleiter J, Schoenhagen P, Min JK, Leipsic JA. SCCT expert consensus document on computed tomography imaging before transcatheter aortic valve implantation (TAVI)/transcatheter aortic valve replacement (TAVR). *J Cardiovasc Comput Tomogr*. Nov-Dec 2012;6(6):366-80. doi:10.1016/j.jcct.2012.11.002
24. Bennett KM, Kent KC, Schumacher J, Greenberg CC, Scarborough JE. Targeting the most important complications in vascular surgery. *J Vasc Surg*. Mar 2017;65(3):793-803. doi:10.1016/j.jvs.2016.08.107
25. Choudhury M. Postoperative management of vascular surgery patients: a brief review. *Clin Surg*. 2017;2:1584.
26. Duan L, Feng K, Tong A, Liang Z. Renal artery stenosis due to neurofibromatosis type 1: case report and literature review. *Eur J Med Res*. Mar 28 2014;19(1):17. doi:10.1186/2047-783x-19-17
27. Khosa F, Krinsky G, Macari M, Yucel EK, Berland LL. Managing incidental findings on abdominal and pelvic CT and MRI, Part 2: white paper of the ACR Incidental Findings Committee II on vascular findings. *J Am Coll Radiol*. Oct 2013;10(10):789-94. doi:10.1016/j.jacr.2013.05.021
28. Clerc D, Grass F, Schäfer M, Denys A, Demartines N, Hübner M. Lower gastrointestinal bleeding-Computed Tomographic Angiography, Colonoscopy or both? *World J Emerg Surg*. 2017;12:1. doi:10.1186/s13017-016-0112-3
29. Abe T, Kai M, Miyoshi O, Nagaie T. Idiopathic Retroperitoneal Hematoma. *Case Rep Gastroenterol*. Sep 11 2010;4(3):318-322. doi:10.1159/000320590

POLICY HISTORY

Date	Summary
March 2023	<ul style="list-style-type: none">• Redirected vascular requests for abdomen alone or pelvis imaging alone to resubmit as abdomen and pelvis CTA required unless condition limited to abdomen• Other vascular abnormalities: clarified indication for non-aortic vascular conditions• Transplant: added section• General Information moved to beginning of guideline with added statement on clinical indications not addressed in this guideline• Added statement regarding further evaluation of indeterminate findings on prior imaging• Aligned sections across body imaging guidelines
April 2022	<ul style="list-style-type: none">• Added indication for UPJ surgery• Clarified note regarding vascular imaging of the aorta and both legs (i.e., CTA aortogram and runoff)• Clarified evaluation of known or suspected aortic aneurysm• Removed follow-up intervals for EVAR and AAA since Abdomen Pelvis CTA is usually appropriate study• Added Y90 indication

Reviewed / Approved by NIA Clinical Guideline Committee

Disclaimer: *National Imaging Associates, Inc. (NIA) authorization policies do not constitute medical advice and are not intended to govern or otherwise influence the practice of medicine. These policies are not meant to supplant your normal procedures, evaluation, diagnosis, treatment and/or care plans for your patients. Your professional judgement must be exercised and followed in all respects with regard to the treatment and care of your patients. These policies apply to all Evolent Health LLC subsidiaries including, but not limited to, National Imaging Associates (“NIA”). The policies constitute only the reimbursement and coverage guidelines of NIA. Coverage for services varies for individual members in accordance with the terms and conditions of applicable Certificates of Coverage, Summary Plan Descriptions, or contracts with governing regulatory agencies. NIA reserves the right to review and update the guidelines at its sole discretion. Notice of such changes, if necessary, shall be provided in accordance with the terms and conditions of provider agreements and any applicable laws or regulations.*