

# CTA Abdomen

**CPT: 74175**

## 1 Major Symptom or Complaint presented as primary indication

### 1.1 Abdominal pain after meals (Consider CTA of Abdomen And Pelvis CPT 74174)

#### 1.1.1 Acute Mesenteric Ischemia suspected, History of:

1.1.1.1 Cardiac dysfunction

1.1.1.2 Vascular disease

1.1.1.3 Recent vascular surgery or intervention (including catheter arteriography)

1.1.1.4 Advanced age (>60)

#### 1.1.2 Abdominal angina suspected

1.1.2.1 Pain occurs 15 to 60 minutes after eating, lasting for several hours

1.1.2.2 May be associated with constipation, flatulence, diarrhea with or without some blood admixture, nausea and vomiting

## References

1. Elliot K. Fishman; From the RSNA Refresher Courses: CT Angiography: Clinical Applications in the Abdomen; RadioGraphics 2001 21: 3S-16S.
2. Odenburg WA, Lau LL, Rodenberg TJ, Edmonds HJ, Burger CD. Acute mesenteric ischemia: a clinical review. Arch Intern Med 2004; 164:1054 -1062
3. Park WM, Gloviczki P, Cherry KJ, Hallett JW, Bower TC, Panneton JM, Schleck C, Ilstrup D, Harmsen WS, Noel AA (2002).Contemporary management of acute mesenteric ischemia: Factors associated with survival. J. Vasc. Surg. 35 (3): 445-52.
4. Harkin Denis W, Lindsay Thomas F, "Chapter 86. Mesenteric Ischemia" (Chapter). Hall JB, Schmidt GA, Wood LDH: Principles of Critical Care, 3e: <http://www.accessmedicine.com/content.aspx?aID=296692>. accessed 10/20/10
5. Filippo Cademartiri, Rolf H. J. M. Raaijmakers, Jan W. Kuiper, Lukas C. van Dijk, Peter M. T. Pattynama, and Gabriel P. Krestin Multi-Detector Row CT Angiography in Patients with Abdominal Angina Radiographics July 2004 24:969-984; doi:10.1148/rg.244035166
6. Shih, Ming-Chen Paul, Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 1, Role in Diagnosis and Differential Diagnosis Am. J. Roentgenol. 2007 188: 452-46
7. Shih, Ming-Chen Paul, Angle, John F., Leung, Daniel A., Cherry, Kenneth J., Harthun, Nancy L., Matsumoto, Alan H., Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 2, Normal Findings and Complications After Surgical and Endovascular Treatment Am. J. Roentgenol. 2007 188: 462-471

## 1.2 Claudication (Consider CTA of Abdominal Aorta and Runoff CPT 75635)

### 1.2.1 Pain, crampy in nature during or after exercise, relieved by rest

#### References

1. Shih, Ming-Chen Paul, Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 1, Role in Diagnosis and Differential Diagnosis Am. J. Roentgenol. 2007 188: 452-46
2. Shih, Ming-Chen Paul, Angle, John F., Leung, Daniel A., Cherry, Kenneth J., Harthun, Nancy L., Matsumoto, Alan H., Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 2, Normal Findings and Complications After Surgical and Endovascular Treatment Am. J. Roentgenol. 2007 188: 462-471

## 1.3 Erectile dysfunction (Consider CTA of Abdomen And Pelvis CPT 74174)

## 1.4 Intestinal Angina (Consider CTA of Abdomen And Pelvis CPT 74174)

### 1.4.1 Pain occurs 15 to 60 minutes after eating, lasting for several hours

### 1.4.2 May be associated with constipation, flatulence, diarrhea with or without some blood admixture, nausea and vomiting

#### References

1. Elliot K. Fishman; From the RSNA Refresher Courses: CT Angiography: Clinical Applications in the Abdomen; RadioGraphics 2001 21: 3S-16S.
2. Odenburg WA, Lau LL, Rodenberg TJ, Edmonds HJ, Burger CD. Acute mesenteric ischemia: a clinical review. Arch Intern Med 2004; 164:1054 -1062
3. Park WM, Gloviczki P, Cherry KJ, Hallett JW, Bower TC, Panneton JM, Schleck C, Ilstrup D, Harmsen WS, Noel AA (2002).Contemporary management of acute mesenteric ischemia: Factors associated with survival. J. Vasc. Surg. 35 (3): 445-52.
4. Harkin Denis W, Lindsay Thomas F, "Chapter 86. Mesenteric Ischemia" (Chapter). Hall JB, Schmidt GA, Wood LDH: Principles of Critical Care, 3e: <http://www.accessmedicine.com/content.aspx?aID=296692>. accessed 10/20/10
5. Filippo Cademartiri, Rolf H. J. M. Raaijmakers, Jan W. Kuiper, Lukas C. van Dijk, Peter M. T. Pattynama, and Gabriel P. Krestin Multi-Detector Row CT Angiography in Patients with Abdominal Angina Radiographics July 2004 24:969-984; doi:10.1148/rg.244035166
6. Shih, Ming-Chen Paul, Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 1, Role in Diagnosis and Differential Diagnosis Am. J. Roentgenol. 2007 188: 452-46
7. Shih, Ming-Chen Paul, Angle, John F., Leung, Daniel A., Cherry, Kenneth J., Harthun, Nancy L., Matsumoto, Alan H., Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 2, Normal Findings and Complications After Surgical and Endovascular Treatment Am. J. Roentgenol. 2007 188: 462-471

## 2 Working Diagnosis or Rule Out presented as primary indication

### 2.1 Aortic Aneurysm Suspected (Consider CTA of Abdomen And Pelvis CPT 74174)y indication

#### 2.1.1 Abdominal and back pain

#### 2.1.2 Dilation seen or suspected on prior imaging

#### References

1. Jonathan Golledge, Juanita Muller, Alan Daugherty, and Paul Norman Abdominal Aortic Aneurysm: Pathogenesis and Implications for Management *Arterioscler. Thromb. Vasc. Biol.*, Dec 2006; 26: 2605 – 2613.
2. Miriam B. Rodin, Martha L. Daviglus, Gordon C. Wong, Kiang Liu, Daniel B. Garside, Philip Greenland, and Jeremiah Stamler Middle Age Cardiovascular Risk Factors and Abdominal Aortic Aneurysm in Older Age Hypertension, Jul 2003; 42: 61 – 68.
3. Stephen A. Badger, Mark E. O'Donnell, Muhammed A. Sharif, Christopher S. Boyd, Raymond J. Hannon, Louis L. Lau, Bernard Lee, and Chee V. Soong Risk Factors for Abdominal Aortic Aneurysm and the Influence of Social Deprivation *Angiology*, Oct 2008; 59: 559 – 566.
4. Martin R. Back Surveillance After Endovascular Abdominal Aortic Aneurysm Repair Perspectives in Vascular Surgery and Endovascular Therapy, Dec 2007; 19: 395 – 400.
5. C.A. Spencer, K. Jamrozik, P.E. Norman, and M.M.D. Lawrence-Brown The potential for a selective screening strategy for abdominal aortic aneurysm *J Med Screen*, Dec 2000; 7: 209 – 211.
6. Debbie Davis and Marveen Craig Unsuspected Abdominal Aortic Aneurysm *Journal of Diagnostic Medical Sonography*, May 2002; 18: 154 – 157.
7. Jack L. Cronenwett A Myth Exposed: Fast Growth in Diameter Does Not Justify Precocious Abdominal Aortic Aneurysm Repair Perspectives in Vascular Surgery and Endovascular Therapy, Mar 2004; 16: 79 – 80.
8. Salah D. Qanadli, Benoît Mesurolle, Marc Coggia, Olivier Barré, Sumio Fukui, Olivier A. Goeau-Brissonnière, Sophie Chagnon, and Pascal Lacombe Abdominal Aortic Aneurysm: Pretherapy Assessment with Dual-Slice Helical CT Angiography *Am. J. Roentgenol.*, Jan 2000; 174: 181 – 187.

## 2.2 Dissection of the aorta, suspected (Consider CTA of Abdomen And Pelvis CPT 74174)

### 2.2.1 Back or abdominal pain,

#### 2.2.1.1 Abnormal appearance of aorta

#### 2.2.1.2 Acute “ripping, tearing, searing” chest, back or abdominal pain

#### 2.2.1.3 Prior aortic repair

#### 2.2.1.4 Shock

#### 2.2.1.5 syncope

#### 2.2.1.6 Unequal blood pressure in the arms

### References

1. Prince Louise A, Johnson Gary A, “Chapter 58. Aortic Dissection and Aneurysms” (Chapter). Tintinalli JE, Kelen GD, Stapczynski JS, Ma OJ, Cline DM: Tintinalli’s Emergency Medicine: A Comprehensive Study Guide, 6th Edition: <http://www.accessmedicine.com/content.aspx?aID=590936>.

## 2.3 Hypertension, suspected renovascular (renal artery stenosis) cause ONE

### 2.3.1 Accelerated or malignant hypertension

### 2.3.2 Epigastric bruit

### 2.3.3 Failure to respond to at least 3 medications

### 2.3.4 Impairment of renal function after treatment with an ACE\* inhibitor

### 2.3.5 Progressive renal failure (rising creatinine, decreased GFR)

### 2.3.6 Recurrent pulmonary edema

### 2.3.7 Severe hypertension in a child or young adult

### 2.3.8 Sudden development or worsening of hypertension at any age

### 2.3.9 Unilateral small kidney discovered with any clinical study

### References

1. Vesna D. Garovic, and Stephen C. Textor; Renovascular Hypertension and Ischemic Nephropathy; Circulation 112: 1362-1374
2. Postma CT, Joosten FB, Rosenbusch G, Thien T. Magnetic resonance angiography has a high reliability in the detection of renal artery stenosis. Am J Hypertens. 1997; 10: 957-963
3. Vasbinder GBC, Nelemans PJ, Kessels AGH, Kroon AA, Maki JH, Leiner T, Beek FJA, Korst MBJM, Flobbe K, de Haan MW, van Zwam WH, Postma CT, Hunink M, de Leeuw PW, van Engelshoven JMA. Accuracy of computed tomographic angiography and magnetic resonance angiography for diagnosing renal artery stenosis. Ann Intern Med. 2004; 141: 674-682

## 2.4 Ischemic bowel suspected (Consider CTA of Abdomen And Pelvis CPT 74174)

### 2.4.1 Abdominal pain after meals

#### 2.4.1.1 Nausea, vomiting or diarrhea

### 2.4.1.2 History of

#### 2.4.1.2.1 Cardiac dysfunction

#### 2.4.1.2.2 Vascular disease

#### 2.4.1.2.3 Recent vascular surgery or intervention (including catheter arteriography)

#### 2.4.1.2.4 Advanced age (>60)

### References

1. Elliot K. Fishman; From the RSNA Refresher Courses: CT Angiography: Clinical Applications in the Abdomen; RadioGraphics 2001 21: 3S-16S.
2. Odenburg WA, Lau LL, Rodenberg TJ, Edmonds HJ, Burger CD. Acute mesenteric ischemia: a clinical review. Arch Intern Med 2004; 164:1054 -1062
3. Park WM, Gloviczki P, Cherry KJ, Hallett JW, Bower TC, Panneton JM, Schleck C, Ilstrup D, Harmsen WS, Noel AA (2002).Contemporary management of acute mesenteric ischemia: Factors associated with survival. J. Vasc. Surg. 35 (3): 445-52.
4. Harkin Denis W, Lindsay Thomas F, "Chapter 86. Mesenteric Ischemia" (Chapter). Hall JB, Schmidt GA, Wood LDH: Principles of Critical Care, 3e: <http://www.accessmedicine.com/content.aspx?aID=296692>. accessed 10/20/10
5. Filippo Cademartiri, Rolf H. J. M. Raaijmakers, Jan W. Kuiper, Lukas C. van Dijk, Peter M. T. Pattynama, and Gabriel P. Krestin Multi-Detector Row CT Angiography in Patients with Abdominal Angina Radiographics July 2004 24:969-984; doi:10.1148/rg.244035166
6. Shih, Ming-Chen Paul, Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 1, Role in Diagnosis and Differential Diagnosis Am. J. Roentgenol. 2007 188: 452-46
7. Shih, Ming-Chen Paul, Angle, John F., Leung, Daniel A., Cherry, Kenneth J., Harthun, Nancy L., Matsumoto, Alan H., Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 2, Normal Findings and Complications After Surgical and Endovascular Treatment Am. J. Roentgenol. 2007 188: 462-471

## 2.5 Peripheral Vascular Disease (Consider CTA of Abdominal Aorta and Runoff CPT 75635)

### 2.5.1 Pain, crampy in nature during or after exercise, relieved by rest

### References

1. Shih, Ming-Chen Paul, Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 1, Role in Diagnosis and Differential Diagnosis Am. J. Roentgenol. 2007 188: 452-46
2. Shih, Ming-Chen Paul, Angle, John F., Leung, Daniel A., Cherry, Kenneth J., Harthun, Nancy L., Matsumoto, Alan H., Hagspiel, Klaus D. CTA and MRA in Mesenteric Ischemia: Part 2, Normal Findings and Complications After Surgical and Endovascular Treatment Am. J. Roentgenol. 2007 188: 462-471

## 2.6 Thrombosis (clot) suspected in Vena Cava, or other abdominal veins

### 2.6.1 Known kidney (renal) malignancy, or other intra-abdominal tumor

### 2.6.2 Edema (swelling) Of legs

### 2.6.3 Collateral blood vessels seen on PE of abdomen

## References

1. Sheth, Sheila, Ebert, Mark D., Fishman, Elliot K. Superior Vena Cava Obstruction Evaluation With MDCT Am. J. Roentgenol. 2010 194: W336-346
2. Harsh Kandpal, Raju Sharma, Shiva Gamangatti, Deep N. Srivastava, and Sushma Vashisht Imaging the Inferior Vena Cava: A Road Less Traveled Radiographics May-June 2008 28:669-689
3. SvaneS. Tumor thrombus of the inferior vena cava resulting from renal carcinoma: a report of 12 autopsied cases. Scand J Urol Nephrol1969; 3: 245–256
4. AH Sonin, MJ Mazer, and TA Powers Obstruction of the inferior vena cava: a multiple-modality demonstration of causes, manifestations, and collateral pathways RadioGraphics, Mar 1992; 12: 309 – 322.
5. Sheila Sheth and Elliot K. Fishman Imaging of the Inferior Vena Cava with MDCT Am. J. Roentgenol., Nov 2007; 189: 1243 – 1251.

## 3 Abnormal Physical Exam Finding presented as primary indication

### 3.1 Diminished femoral pulses

### 3.2 Pulsatile abdominal mass

## 4 Abnormal Lab or Imaging presented as primary indication

### 4.1 Abnormal aorta or other vessel on prior imaging

#### 4.1.1 Interval follow up at greater than 1 year

#### 4.1.2 New or worsening symptoms

## 5 Significant Prior Medical History presented as primary indication

### 5.1 Aneurysm, known from prior exams

#### 5.1.1 Interval Follow Up After Repair if Ultrasound is Inadequate

##### 5.1.1.1 Imaging at 3, 6, and 12 months after repair, then annually

#### 5.1.2 Interval Follow Up of Un-Repaired Abdominal Aortic Aneurysm

##### 5.1.2.1 2.5-2.9 cm size aneurysm: 5-year interval follow-up

##### 5.1.2.2 3.0-3.4 cm size aneurysm: 3-year interval follow-up

##### 5.1.2.3 3.5-3.9 cm size aneurysm: 2-year interval follow-up

##### 5.1.2.4 4.0-4.4 cm size aneurysm: 1-year interval follow-up

##### 5.1.2.5 4.5-4.9 cm size aneurysm: 6-month interval follow-up

##### 5.1.2.6 5.0-5.5 cm size aneurysm: 3-6 month interval follow-up

#### 5.1.3 Preoperative

### References

1. <https://radiopaedia.org/articles/abdominal-aortic-aneurysm?lang=us>
2. Elliot K. Fishman; From the RSNA Refresher Courses: CT Angiography: Clinical Applications in the Abdomen; RadioGraphics 2001 21: 3S-16S
3. Recommendation of the Society of Interventional Radiologists <http://www.scvir.org/patients/abdominal-aortic-aneurysms/> accessed 11/05/09
4. L. Engellau, U. Albrechtsson, L. Norgren, and E.-M. Larsson Long-term results after endovascular repair of abdominal aortic aneurysms with the stentor and vanguard stent-graft Acta Radiol May 2004 45:275–283
5. Robert A. McCready, Margaret Ann Bryant, Janet L. Divelbiss, and Janet L. Phillips Complete Endograft Collapse 9½ Years Following Endograft Repair of an Abdominal Aortic Aneurysm VASC ENDOVASCULAR SURG December 2009 43: 627-630, Article advocates lifelong follow up of endovascular repairs.
6. Jacek Szmidt, Zbigniew Galazka, Olgierd Rowinski, Slawomir Nazarewski, Tomasz Jakimowicz, Kamil Pietrasik, Katarzyna Grygiel, and Witold Chudzinski Late aneurysm rupture after endovascular abdominal aneurysm repair Interact CardioVasc Thorac Surg 2007;6:490-494 Article advocates EUROSTAR protocol for follow up imaging at 3, 6 and 12 month and then annually.



## 5.2 Carcinoma of pancreas

### 5.2.1 For vascular mapping

#### References

1. Elliot K. Fishman; From the RSNA Refresher Courses: CT Angiography: Clinical Applications in the Abdomen; RadioGraphics 2001 21: 3S-16S.
2. Winston, Corinne B., Lee, Nancy A., Jarnagin, William R., Teitcher, Jerrold, DeMatteo, Ronald P., Fong, Yuman, Blumgart, Leslie H. CT Angiography for Delineation of Celiac and Superior Mesenteric Artery Variants in Patients Undergoing Hepatobiliary and Pancreatic Surgery Am. J. Roentgenol. 2007 189: W13-19

## 5.3 Breast Reconstruction Planning (DIEP Flap) if Doppler US is inadequate

#### References

1. Alessandro Cina, et al Planning Breast Reconstruction with Deep Inferior Epigastric Artery Perforating Vessels: Multidetector CT Angiography versus Color Doppler US Radiology June 2010 255:3 979-98

## 5.4 Fibromuscular dysplasia

### 5.4.1 Hypertension, suspected renovascular cause ONE

#### 5.4.1.1 Accelerated or malignant hypertension

#### 5.4.1.2 Epigastric bruit

#### 5.4.1.3 Failure to respond to at least 3 medications

#### 5.4.1.4 Impairment of renal function after treatment with an ACE\* inhibitor

#### 5.4.1.5 Progressive renal failure (rising creatinine, decreased GFR)

#### 5.4.1.6 Recurrent pulmonary edema

#### 5.4.1.7 Severe hypertension in a child or young adult

#### 5.4.1.8 Sudden development or worsening of hypertension at any age

#### 5.4.1.9 Unilateral small kidney discovered with any clinical study

#### References

1. Vesna D. Garovic, and Stephen C. Textor; Renovascular Hypertension and Ischemic Nephropathy; Circulation 112: 1362-1374
2. Postma CT, Joosten FB, Rosenbusch G, Thien T. Magnetic resonance angiography has a high reliability in the detection of renal artery stenosis. Am J Hypertens. 1997; 10: 957-963
3. Vasbinder GBC, Nelemans PJ, Kessels AGH, Kroon AA, Maki JH, Leiner T, Beek FJA, Korst MBJM, Flobbe K, de Haan MW, van Zwam WH, Postma CT, Hunink M, de Leeuw PW, van Engelshoven JMA. Accuracy of computed tomographic angiography and magnetic resonance angiography for diagnosing renal artery stenosis. Ann Intern Med. 2004; 141: 674-682

## 5.5 Hepatic Transplant

### 5.5.1 Preoperative (for either donor or recipient) and interval follow up (of recipient.)

#### 5.5.1.1 Send for physician review for intervals less than six months.

## 5.6 Hepatic tumor

### 5.6.1 Preoperative and interval follow up

#### 5.6.1.1 Send for physician review for intervals less than six months.

## 5.7 Hypertension, suspected renovascular (renal artery stenosis) cause ONE

### 5.7.1 Accelerated or malignant hypertension

### 5.7.2 Epigastric bruit

### 5.7.3 Failure to respond to at least 3 medications

### 5.7.4 Impairment of renal function after treatment with an ACE\* inhibitor

### 5.7.5 Progressive renal failure (rising creatinine, decreased GFR)

### 5.7.6 Recurrent pulmonary edema

### 5.7.7 Severe hypertension in a child or young adult

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3. Vasbinder GBC, Nelemans PJ, Kessels AGH, Kroon AA, Maki JH, Leiner T, Beek FJA, Korst MBJM, Flobbe K, de Haan MW, van Zwam WH, Postma CT, Hunink M, de Leeuw PW, van Engelshoven JMA. Accuracy of computed tomographic angiography and magnetic resonance angiography for diagnosing renal artery stenosis. Ann Intern Med. 2004; 141: 674-682

### 5.8 Interval Follow up of surgical repair of vascular lesion(s) at 6-month intervals.

## 5.9 Kidney Transplant

### 5.9.1 Preoperative (for either donor or recipient) and interval follow up (of recipient.)

#### 5.9.1.1 Send for physician review for intervals less than six months.

## 5.10 Kidney tumor

### 5.10.1 Preoperative and interval follow up

#### 5.10.1.1 Send for physician review for intervals less than six months.

## 5.11 Liver Transplant

### 5.11.1 Preoperative (for either donor or recipient) and interval follow up (of recipient.)

5.11.1.1 Send for physician review for intervals less than six months.

## 5.12 Liver tumor

### 5.12.1 Preoperative and interval follow up

5.12.1.1 Send for physician review for intervals less than six months.

## 5.13 Renal Transplant

### 5.13.1 Preoperative (for either donor or recipient) and interval follow up (of recipient.)

5.13.1.1 Send for physician review for intervals less than six months.

## 5.14 Renal tumor

### 5.14.1 Preoperative and interval follow up

5.14.1.1 Send for physician review for intervals less than six months.

## 5.15 Vascular Disease (known from prior imaging or testing)

5.15.1 Prior to surgical or other intervention

5.15.2 New or worsening symptoms