CLINICAL GUIDELINES

Peripheral Vascular Intervention

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EviCore
By EVERNORTH

EviCore healthcare Clinical Decision Support Tool Diagnostic Strategies: This tool addresses common symptoms and symptom complexes. Imaging requests for individuals with atypical symptoms or clinical presentations that are not specifically addressed will require physician review. Consultation with the referring physician, specialist, and/or individual's Primary Care Physician (PCP) may provide additional insight.

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General Information

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General Information for Vascular Intervention Requests 4

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General Information for Vascular Intervention Requests

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Glossary

Terms and abbreviations

Aneurysm	Defined as a diameter 1.5x the normal arterial diameter.
Angioplasty	A procedure that utilizes a catheter with a balloon that is inflated to enlarge a stenotic area.
Ankle-Brachial Index (ABI)	Ratio of the systolic blood pressure (SBP) measured at the ankle to the brachial (arm) SBP.
Atherectomy	A procedure that utilizes a catheter with a sharp blade or laser on the end of the catheter to remove plaque from a blood vessel.
CTO	Chronic total occlusion
Crescendo TIA	Multiple recurrent episodes of TIA over hours to days.
Critical limb ischemia	Severe stenosis or occlusion in the vessels supplying the lower extremity such that limb loss will result without treatment. Symptoms of critical limb ischemia in the lower extremities include but are not limited to non-healing wounds, gangrene and ischemic rest pain.
Dissection	Disruption of the media layer of the aorta with bleeding within and along the wall of the aorta.
Graft	Synthetic material used to replace or repair a segment of an artery or bypass an occluded segment of artery.

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High-grade stenosis	A high-grade stenosis is defined as at least a 50% narrowing of an artery.
IIH	Idiopathic intracranial hypertension
Ischemic rest pain	Pain arises from severe arterial occlusive disease in the lower extremities such that the patient experiences pain in the distal aspect of the foot and toes while the limb is in the supine position as would occur with sleep. The pain is relieved with the limb in the dependent position or "dangling from the bed" as the limb is depending on gravity to assist with perfusion.
MMAE	Middle Meningeal Artery Embolization
NASCET	North American Symptomatic Carotid Endarterectomy Trial
Occlusion	Blockage of a blood vessel, typically due to atherosclerotic plaque buildup, resulting in absence of blood flow through at least a portion of the vessel that can lead to ischemic symptoms depending on the location, length and chronicity
Pseudo-aneurysm	Outpouching of blood resulting from disruption of the arterial wall with extravasation of blood contained by periarterial connective tissue and not by the arterial wall layers.
PTA	Percutaneous transluminal angioplasty.
Spider veins	Enlarged, tortuous veins that are usually distributed in a web like cluster. These veins are typically <3mm in diameter.
Stent	A metal scaffold placed inside the artery to maintain patency.
Stenosis	Narrowing or constriction of a blood vessel, typically due to atherosclerotic plaque buildup, that reduces blood flow and can lead to ischemic symptoms depending on the location and severity.
Stent-graft	A metal scaffold covered by fabric material placed inside an artery.

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Symptomatic carotid stenosis	Characterized by either a transient ischemic attack or cerebrovascular accident that is in the distribution of known severe carotid stenosis, e g., transient right sided upper and lower extremity paralysis in the setting of 70% left internal carotid artery stenosis.
Symptomatic aneurysm	Unrelenting non-positional back pain in the setting of a known abdominal or thoracic aortic aneurysm. Individuals with a symptomatic aneurysm may or may not have evidence of a free or contained rupture. The presence of symptoms indicate impending rupture.
Varicose veins	Enlarged, tortuous veins often caused by incompetent valves. Veins are typically ≥3mm in diameter.
Velocity ratio (V1/V2)	Ratio of peak systolic velocity in the diseased segment of blood vessel demonstrating elevated flow velocities to the peak systolic velocity of blood flow in normal vessel just proximal to area of concern in arteries, or just distal in veins.
Venous reflux	Characterized by incompetent or "leaky" valves that no longer function as one-way valves facilitating the flow of blood from the lower extremities to the heart. This results in pooling of blood in the lower extremities leading to distended engorged veins when the lower extremities are in the dependent position as in sitting or standing.

Documentation Requirements for Vascular Intervention Requests

Documentation needed to complete a prior authorization request for vascular intervention include **all** of the following:

- Procedure proposed matching the clinical need
- Condition being treated by the requested procedure
- Detailed documentation of provider-directed conservative treatment, duration and frequency of treatment, and the response to such treatments, if applicable
- Detailed documentation of any previous intervention and the response
- Detailed documentation of location and size of aneurysmal disease, if present
- Detailed documentation regarding nature of the critical limb ischemia: non-healing wound or ischemic rest pain, if applicable

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- Recent (within 6 months) written reports of any of the following diagnostic imaging modalities and studies acceptable for purposes of the peripheral vascular intervention guidelines:
  - Ankle-brachial indices, segmental pressures and pulse volume recordings as applicable
  - Duplex ultrasound including carotid, lower extremity and abdominal
  - CTA or CTV abdomen/pelvis with or without lower extremity run-off
  - MRA or MRV abdomen/pelvis with or without lower extremity run-off
  - Arteriogram or venogram
  - IVUS – intravascular ultrasound
- Recent (within 6 months) clinical evaluation documenting:
  - Symptoms (if lifestyle-limiting, detailed documentation regarding quality-of-life parameters that are affected)
  - Physical exam findings to include location and size of ulcers

Emergent and Urgent Requests

Individuals being evaluated for vascular/endovascular surgery should be screened for the presence of a medical condition that warrants urgent/emergent definitive surgical treatment. Provider directed non-surgical management is **not** required when there is documentation, supported by imaging studies or clinical assessment, of any of the following urgent/emergent conditions:

- Critical limb ischemia
- Symptomatic carotid stenosis
- Crescendo TIAs (multiple recurrent episodes of TIA over hours to days)
- Symptomatic or ruptured aneurysms

An urgent/emergent request based on 2018 NCQA standards for utilization management occurs when the time frame for making routine or non-life-threatening determinations on care **either**:

- Could seriously jeopardize the life, health, or safety of the member or others, due to the member's psychological state
- In the opinion of a practitioner with knowledge of the member's medical or behavioral condition, would subject the member to adverse health consequences without the care or treatment that is the subject of the request.

Procedures to treat arterial disease may be medically necessary on an intra-operative basis

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Background and Supporting Information

Prior-authorization requests should be submitted at least two weeks prior to the anticipated date of an elective surgery.

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Arterial Intervention Guidelines

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Carotid and Vertebral Revascularization

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Coding

Procedures indicated for carotid revascularization

Procedure	CPT®
Carotid Angioplasty/Stent	
Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty, when performed, and radiological S&I; with distal embolic protection	37215
Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty, when performed, and radiological supervision and interpretation; without distal embolic protection	37216
Transcatheter placement of intravascular stent(s), intrathoracic common carotid artery or innominate artery by retrograde treatment, open ipsilateral cervical carotid artery exposure, including angioplasty, when performed, and radiological supervision and interpretation	37217
Transcatheter placement of intravascular stent(s), intrathoracic common carotid artery or innominate artery, open or percutaneous antegrade approach, including angioplasty, when performed, and radiological supervision and interpretation	37218
Transcatheter placement of extracranial vertebral artery stent(s), including radiologic supervision and interpretation, open or percutaneous; initial vessel	0075T
Transcatheter placement of extracranial vertebral artery stent(s), including radiologic supervision and interpretation, open or percutaneous; each additional vessel (List separately in addition to code for primary procedure)	0076T
Carotid Endarterectomy	
Thromboendarterectomy, including patch graft, if performed; carotid, vertebral, subclavian, by neck incision	35301
Reoperation, carotid, thromboendarterectomy, more than 1 month after original operation (List separately to code for primary procedure)	35390
Transcarotid Stenting with Dynamic Flow Reversal (TCAR)	

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Procedure	CPT®
Transcatheter placement cervical carotid open or percutaneous with embolic protection	37215

Carotid Revascularization - General Information

The determination of medical necessity for the performance of carotid revascularization is always made on a case-by-case basis based on the following information:

- The presence of urgent/emergent indications/conditions warrants definitive surgical/endovascular treatment in lieu of provider-directed non-surgical management. Urgent/emergent conditions for carotid revascularization include **any** of the following:
  - Crescendo TIA's
  - Transient monocular blindness, amaurosis fugax
  - Free-floating thrombus
  - Enlarging carotid pseudoaneurysm
  - Infection of carotid patch placed during prior carotid endarterectomy
  - Recent CVA or TIA
- Confirmatory imaging studies and clinical notes are required

Procedures included

- Carotid endarterectomy (CEA)
- Transfemoral carotid artery stenting (TFCAS)
- Transcarotid artery revascularization (TCAR)

Carotid Revascularization - Criteria

Symptomatic carotid stenosis

Carotid endarterectomy (CEA)

CEA is the preferred treatment for symptomatic carotid artery stenosis

- Carotid revascularization with Carotid endarterectomy (CEA) is medically necessary for symptomatic carotid stenosis when **both** of the following conditions are present:
  - Carotid stenosis is demonstrated by ≥50% stenosis documented by angiogram, CTA, carotid duplex, or MRA
  - Presence of **any** of the following conditions corresponding anatomically to the distribution of the carotid lesion to be treated:
    - Transient ischemic attack (TIA)
    - Focal cerebral ischemia producing a non-disabling stroke

- Transient monocular blindness (amaurosis fugax)

Asymptomatic carotid stenosis

Carotid endarterectomy (CEA)

CEA is the preferred treatment for asymptomatic carotid stenosis (as documented by clinical notes) when the carotid stenosis is ≥70% based on NASCET criteria on carotid duplex, CTA, MRA, or angiogram within last 6 months.

Carotid artery stenting (CAS) and Transcarotid artery revascularization (TCAR)

- CAS or TCAR is indicated when an individual meets criteria for carotid revascularization and is considered to be **high-risk** for CEA due to a documented history of **any** of the following significant comorbidities or anatomic risk factors for CEA:
  - Congestive heart failure (CHF) class III/IV
  - Left ventricular ejection fraction (LVEF) <30%
  - Unstable angina
  - Angina with known >2 vessel CAD
  - Severe COPD
  - ESRD
  - Age 75 or older
  - Recent (within the last six months) myocardial infarction (MI)
  - Recurrent stenosis in the setting of a previous CEA at any time
  - Prior radiation treatment to the neck
  - Previous radical neck dissection at any time
  - Permanent contralateral cranial nerve injury
  - Contralateral carotid occlusion
  - Tandem high-grade stenosis on the same side
  - High cervical carotid stenosis above C2 vertebral body
  - Takayasu arteritis with stenosis
  - Carotid pseudoaneurysm
  - Carotid dissection with stenosis
  - Fibromuscular dysplasia with stenosis

Intervention for recurrent stenosis after prior carotid stent is indicated for the following patients:

- Symptomatic recurrent stenosis with **either**:
  - Duplex: PSV ≥ 240 cm/sec
  - CTA, MRA or angiogram evidence of ≥50% stenosis
- Asymptomatic recurrent stenosis with **either**:
  - Duplex PSV ≥ 370 cm/sec

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- CTA, MRA or angiogram evidence of ≥70% stenosis

Carotid Revascularization Non-indications

Carotid revascularization (CEA or CAS) is not medically necessary in individuals who have had a disabling stroke (modified Rankin scale ≥3)

Asymptomatic carotid individuals should have an adequate life expectancy to benefit from a carotid intervention.

Extracranial Vertebral Artery Stenosis

Treatment of extracranial vertebral artery stenosis

Extracranial vertebral artery angioplasty with stent placement is considered medically necessary when **all** of the following criteria are met:

- Failure of antiplatelet therapy or anticoagulation therapy
- Non-vascular etiologies have been excluded or treated
- Clinical history documents one of the following ongoing symptoms:
  - Dizziness
  - Unilateral limb weakness
  - Dysarthria
  - Recurrent headache
  - Recurrent nausea/vomiting
  - Recurrent posterior circulation embolic stroke
- One of the following criteria are met:
  - 60-99% bilateral extracranial vertebral artery stenosis
  - 60-99% unilateral extracranial vertebral artery stenosis in the setting of **any** of the following:
    - A dominant vertebral and hypoplastic contralateral vertebral artery
    - Contralateral vertebral artery ends in posteroinferior cerebellar
    - Contralateral vertebral artery is occluded

Non-indications

- Extracranial vertebral artery angioplasty with stent placement is considered experimental, investigational, or unproven for treatment of **any** other indication, including asymptomatic vertebral artery stenosis

Evidence Discussion

Carotid Endarterectomy

Symptoms of carotid stenosis include transient ischemic attack (distinct focal neurological dysfunction persisting less than 24 hours), focal cerebral ischemia producing a non-disabling stroke (modified Rankin scale <3 with symptoms for 24 hours or more), and transient monocular blindness (amaurosis fugax).

Carotid endarterectomy is a procedure that involves making an incision into the internal carotid artery with surgical removal of atherosclerotic plaque and subsequent closure of the artery primarily or with a patch. The procedure can involve the use of measures supportive of intracranial circulation during clamp time including placement of an intra-arterial shunt or neuromonitoring such as electroencephalogram (EEG) or somatosensory evoked potentials (SEPS). In some individuals who are noted to be at high risk for CEA secondary to medical co-morbidities or anatomic risk factors such as prior radiation or redo operation, carotid stenting can be considered.

Carotid Angioplasty and Stenting and TCAR

Carotid angioplasty/stenting form of carotid revascularization for atherosclerotic disease in which a stent and more often than not a balloon prior to that are placed over a wire through the lesion of interest to dilate and resolve a stenosis. Since threading a wire through plaque can potentially lead to fracturing and embolization of the plaque into the distal intracranial circulation, an embolic protection device is generally employed during carotid stenting. Carotid stenting is also indicated to treat aneurysmal disease involving the carotid artery. Carotid stenting is an option for individuals who are considered high risk for CEA and is offered as an alternative to CEA.

CMS has determined that CAS with embolic protection is reasonable and necessary only if performed in facilities that have been determined to be competent in performing the evaluation, procedure and follow-up necessary to ensure optimal individual outcomes. Standards to determine competency include specific physician training standards, facility support requirements and data collection to evaluate outcomes during a required re-evaluation.

TCAR is a method of deploying a transcarotid stent under reverse carotid flow to reduce the incidence of cerebral embolization. This offers low procedural stroke rates in individuals who are considered high risk.

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Thoracic and Thoracoabdominal Aorta

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General Information

Approach to pathology and repair of thoracic aortic pathology is almost universally divided between those affecting the ascending aorta and those affecting the descending thoracic aorta.

Procedures for repair of a thoracic aortic aneurysm include:
- Open surgical repair
- Thoracic endovascular aortic repair (TEVAR)

Coding

Procedures indicated for treatment of thoracic and thoracoabdominal aneurysms

Procedure	CPT®
Descending thoracic aorta graft, with or without bypass	33875
Repair of thoracoabdominal aortic aneurysm with graft, with or without cardiopulmonary bypass	33877
TEVAR (Endovascular repair of descending thoracic aorta)	
Endovascular repair of thoracic aorta, including pre-procedure sizing and device selection, nonselective catheterization(s), all associated radiological supervision and interpretation; by deployment of an aorto-aortic tube endograft covering the left subclavian artery and all aortic tube endograft extension(s) proximally in the aortic arch and ascending aorta and distally to the celiac artery, when performed	33880
Endovascular repair of thoracic aorta, including pre-procedure sizing and device selection, nonselective catheterization(s), all associated radiological supervision and interpretation; by deployment of an aorto-aortic tube endograft not involving coverage of the left subclavian artery origin and all endograft extension(s) placed from the level of the left subclavian carotid artery to the celiac artery	33881

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Procedure	CPT®
Endovascular repair of the thoracic aorta by deployment of a branched endograft multipiece system involving an aorto-aortic tube device with a fenestration for the left subclavian artery stent graft(s) and all aortic tube endograft extension(s) placed from the level of the left common carotid artery to the celiac artery, including pre-procedure sizing and device selection, all target zone angioplasty, all nonselective catheterization(s) and left subclavian artery selective catheterization(s), and all associated radiological supervision and interpretation	33882
Delayed placement of proximal extension prosthesis(es) not involving coverage of the left subclavian artery origin, after endovascular repair of the thoracic aorta, including pre-procedure sizing and device selection, nonselective catheterization(s), all associated radiological supervision and interpretation, and treatment zone angioplasty/stenting, when performed	33883
Delayed placement of distal extension prosthesis(es) from the level of the left subclavian artery to the celiac artery, after endovascular repair of descending thoracic aorta, including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation	33886

Thoracic and Thoracoabdominal Aorta - Criteria

General guidelines

Intervention is considered medically necessary for **any** of the following indications:

- Aneurysm formation, including pseudoaneurysm
- Traumatic aortic transection and its sequelae including rupture, hemothorax, pseudoaneurysm
- Dissection of the aorta, acute and chronic, including intramural hematoma
- Penetrating aortic ulcer
- Coarctation of the aorta

Urgent Requests with regard to thoracic aortic pathology are indicated for individuals presenting with **any** of the following symptomatic conditions:

- Cases of active bleeding in the area of the pathology (e.g., hemothorax, pericardial effusion, free fluid in the abdomen)
- Contained or uncontained rupture
- Acute limb ischemia
- Visceral ischemia, noted as abdominal pain from mesenteric ischemia or elevated creatinine from renal ischemia

- Paralysis of bilateral lower extremities secondary to spinal cord ischemia

Thoracic Aortic Aneurysm

Repair (open surgical repair or TEVAR) of a thoracic aortic aneurysm is considered medically necessary when the clinical history includes **any** of the following conditions:

- Thoracic aorta ≥5.5cm in asymptomatic individuals as documented by CTA/MRA chest
- Thoracic aorta of any size in an individual with a thoracoabdominal aneurysm in which the abdominal aortic aneurysm is ≥5 cm as documented by CTA/MRA chest
- Mycotic aneurysm (as documented by clinical notes including CTA/MRA chest or laboratory findings) of any size
- Any aneurysm ≥4cm in an individual with Marfan syndrome, Ehlers-Danlos or Loeys-Dietz at the discretion of the surgeon
- Aneurysm growth rate of ≥1.0 cm/yr in an aorta with a diameter ≥4 cm and ≤5.5 cm as documented by CTA/MRA chest

Descending Thoracic Aortic Dissection

These guidelines refer to either a type B dissection, distal to the left subclavian artery or to a previously repaired type A dissection with extension into the descending thoracic aorta.

- Repair of hyperacute (<24 hours from onset of symptoms) or acute type B (1 to 14 days since onset of symptoms) aortic dissection is considered medically necessary when **any** of the following is present:
  - Acute limb ischemia or malperfusion as documented by clinical notes
  - Persistent back pain despite adequate blood pressure control documented by clinical notes
  - Aortic expansion ≥6cm documented by CTA/MRA chest
  - Progression of dissection to previously uninvolved areas of the aorta documented by CTA/MRA chest
- Repair of a sub-acute type B aortic dissection (15-90 days since onset of symptoms) is considered medically necessary in the event of **any** of the following:
  - Persistent back pain despite adequate blood pressure control documented by clinical noted
  - Pseudoaneurysm formation documented by CTA/MRA chest
  - Progression of dissection to previously uninvolved sections of the aorta documented by CTA/MRA chest
  - Interval increase in the aortic diameter by ≥0.5cm documented by CTA/MRA chest
  - Dynamic flap presenting with intermittent ischemia as detected by clinical presentation

- Repair of a chronic type B aortic dissection (>90 days since onset of symptoms) is considered medically necessary in the event of **either**:
  - Aneurysmal degeneration of the aorta to a diameter ≥5.5cm documented by CTA/MRA chest
  - Development of high-grade stenosis of the aorta or its branches documented by CTA/MRA chest
- A TEVAR procedure is considered medically necessary for subsequent repair of the thoracic aorta in individuals with a previously treated type A dissection with an elephant trunk or equivalent

Traumatic Aortic Transection

TEVAR is considered medically necessary in individuals with a known Grade 1 traumatic aortic transection if subsequent imaging demonstrates **any** of the following:

- Pseudoaneurysm formation
- Intramural hematoma formation
- Hemothorax without overt rupture of the thoracic aorta
- Suspected rupture of the thoracic aorta

Note:

Typically, traumatic aortic transections are treated emergently but can in certain cases be monitored and treated expectantly.

Other Pathologies

TEVAR is considered medically necessary to treat symptomatic high-grade stenosis, aneurysmal disease, impending rupture, or frank rupture when there are other pathologies affecting the thoracic aorta such as:

- Coarctation of the aorta when **both**:
  - Confirmed by CTA/MRA Chest
  - Symptomatic clinical presentation
- Various vasculitides with high-grade stenosis or aneurysm confirmed by CTA/MRA Chest

Intramural Hematoma and Penetrating Aortic Ulcer Greater than 1cm

TEVAR or EVAR is considered medically necessary to treat aortic pathology affecting the abdominal aorta when the individual's clinical history documents (either):

- Recurrent or persistent symptoms including abdominal or back pain despite medical management
- Ischemia of the visceral organs including the bowels and solid organ

Evidence Discussion

The ascending aorta is generally the purview of the cardiothoracic surgeon, and the descending thoracic aorta is generally within the purview of the vascular surgeon. If the pathology overlaps between the ascending and descending aorta, hybrid procedures involving first repair of the ascending aorta by the cardiothoracic surgeon and subsequent repair of the descending thoracic aorta by the vascular surgeon is common.

Surgical repair of the thoracic aorta may be performed for multiple pathologies, the most common being aneurysm and dissection. Emergent cases usually present with symptoms of impending rupture, organ malperfusion or hemodynamic instability. For these cases, advanced imaging is required for surgical planning. Cases of aortic trauma and dissection may involve multiple extrathoracic regions including the abdominal and cerebrovascular vessels. Additional imaging of anatomic regions with suspected involvement are considered necessary in these cases. For chronic aortic dissection and asymptomatic aneurysmal disease, multiple major studies have been conducted to recommend criteria for intervention based on size and anatomic considerations.

Ascending aortic aneurysms often require an open repair approach. Most descending thoracic aortic interventions are treated with endovascular repair, but some open or hybrid repairs are still indicated for challenging anatomy. Additional factors that may warrant thoracic aortic imaging and intervention include severe atherosclerosis/stenosis, penetrating ulcer, trauma, connective tissue disease and familial/genetic disorders that predispose patients to dissection and aneurysm formation. Imaging and intervention needs may vary on a case-by-case basis for definitive treatment. Endovascular repairs do require additional postoperative surveillance due to their higher incidence of technical complications over time.

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Abdominal Aorta and Iliac Artery Pathology

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General Information

Types of aortoiliac pathology include:

- Aneurysm formation, including pseudoaneurysm
- Dissection of the aorta, acute and chronic, including intramural hematoma
- Penetrating aortic ulcer
- Atherosclerotic occlusive disease

Aortic dissection affecting the abdominal aorta if symptomatic presents with ischemia of the visceral organs including the bowels and solid organs. Treatment can include repair of the intimal tear in the descending thoracic aorta or direct revascularization of the end organ with either stent placement or bypass graft.

Coding

Treatment of abdominal aortic and iliac artery pathology

Procedure codes	CPT®
Endovascular repair of infrarenal aorta by deployment of an aorto-aortic tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the aortic bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the aortic bifurcation; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34701
Endovascular repair of infrarenal aorta by deployment of an aorto-aortic tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the aortic bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the aortic bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34702

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Procedure codes	CPT®
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-uni-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34703
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-uni-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34704
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-bi-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34705
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-bi-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34706

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Procedure codes	CPT®
Endovascular repair of iliac artery by deployment of an ilio-iliac tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally to the iliac bifurcation, and treatment zone angioplasty/stenting, when performed, unilateral; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation)	34707
Endovascular repair of iliac artery by deployment of an ilio-iliac tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally to the iliac bifurcation, and treatment zone angioplasty/stenting, when performed, unilateral; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation, traumatic disruption)	34708
Endovascular repair of iliac artery, not associated with placement of an aorto-iliac artery endograft at the same session, by deployment of an iliac branched endograft, including pre-procedure sizing and device selection, all ipsilateral selective iliac artery catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally in the internal iliac, external iliac, and common femoral artery(ies), and treatment zone angioplasty/stenting, when performed, for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation, penetrating ulcer), unilateral	34718
Endovascular repair of iliac artery at the time of aorto-iliac artery endograft placement by deployment of an iliac branched endograft including pre-procedure sizing and device selection, all ipsilateral selective iliac artery catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally in the internal iliac, external iliac, and common femoral artery(ies), and treatment zone angioplasty/stenting, when performed, for rupture or other than rupture (eg, for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation, penetrating ulcer, traumatic disruption), unilateral (List separately in addition to code for primary procedure)	34717

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Procedure codes	CPT®
Endovascular repair of visceral aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including one visceral artery endoprosthesis (superior mesenteric, celiac or renal artery)	34841
Endovascular repair of visceral aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including two visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[ies])	34842
Endovascular repair of visceral aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including three visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[ies])	34843
Endovascular repair of visceral aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) by deployment of a fenestrated visceral aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including four or more visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[ies])	34844
Endovascular repair of visceral aorta and infrarenal abdominal aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including one visceral artery endoprostheses (superior mesenteric, celiac or renal artery)	34845
Endovascular repair of visceral aorta and infrarenal abdominal aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including two visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[ies])	34846

Procedure codes	CPT®
Endovascular repair of visceral aorta and infrarenal abdominal aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including three visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[ies])	34847
Endovascular repair of visceral aorta and infrarenal abdominal aorta (e.g., aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption) with a fenestrated visceral aortic endograft and concomitant unibody or modular infrarenal aortic endograft and all associated radiological supervision and interpretation, including target zone angioplasty, when performed; including four or more visceral artery endoprostheses (superior mesenteric, celiac and/or renal artery[ies])	34848
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37258
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37260
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; arterial, other than hemorrhage or tumor (eg, congenital or acquired arterial malformations, arteriovenous malformations, arteriovenous fistulas, aneurysms, pseudoaneurysms)	37242
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; for arterial or venous hemorrhage or lymphatic extravasation	37244

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Procedure codes	CPT®
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37259
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37261

Abdominal Aorta - Criteria

General Guidelines

Urgent/emergent requests are for symptomatic individuals and are indicated when there is documentation of any of the following conditions:

- Recent bleeding or contained hematoma
- Symptoms concerning for impending rupture (pain in the back, abdomen, or flank, possibly radiating to the groin)
- Acute limb ischemia (lower extremity sensory deficit, motor deficit, cold extremity)
- Paralysis of a lower extremity

Abdominal Aortic Aneurysm - Criteria

Repair of an abdominal aortic aneurysm via open surgical repair or EVAR is considered medically necessary, regardless of symptoms, when imaging documents **any** of the following conditions:

- An abdominal aorta ≥5.5cm in a male or an abdominal aorta ≥5.0cm in a female
- An abdominal aortic aneurysm ≥3cm within a thoracoabdominal aneurysm where the thoracic aortic aneurysm is ≥6cm
- A saccular aneurysm of any size
- A mycotic aneurysm of any size (this includes aneurysms suspected to be mycotic)

- An aorta with an accelerated growth rate of ≥0.5cm in a year with a current diameter between 4.5cm to 5cm
- An aorta with any size diameter when there is an accelerated growth rate of ≥1cm in a year
- A small aneurysm between 3cm and 5cm with extensive mural thrombus that is embolizing to the lower extremities

Abdominal Aortic Dissection - Criteria

Repair of hyperacute (<24 hours from onset of symptoms) or acute (1 to 14 days since onset of symptoms) aortic dissections is considered medically necessary when the clinical history documents **any** of the following:

- Acute limb ischemia or malperfusion as demonstrated on clinical exam
- Bowel ischemia, solid organ ischemia, or persistent abdominal pain despite adequate blood pressure control
- CTA or MRA documents aortic expansion ≥5cm
- CTA or MRA documents progression of dissection into previously uninvolved portions of the aorta

Repair of a sub-acute aortic dissection (15-90 days since onset of symptoms) treated with medical management is considered medically necessary when the clinical history documents **any** of the following:

- Persistent back pain despite adequate blood pressure control
- Pseudoaneurysm formation documented by CTA or MRA
- CTA or MRA documents progression of dissection into previously uninvolved portions of the aorta
- CTA or MRA documents continued expansion of the aortic diameter ≥5cm
- Dynamic flap presenting with intermittent ischemia as documented by **any** of the following symptoms in an extremity:
  - Intermittent malperfusion
  - Numbness
  - Pain
  - Coldness
  - Absent radial and ulnar pulses
  - Mild sensory impairment

Repair of a chronic aortic dissection (>90 days since onset of symptoms) treated with medical management is considered medically necessary in the event of **either** of the following:

- Aneurysmal degeneration of the aorta to a diameter ≥5 cm
- Development of high-grade stenosis of the aorta or its branches documented by imaging

Intramural Hematoma and Penetrating Aortic Ulcer Greater than 1cm

TEVAR or EVAR is considered medically necessary to treat aortic pathology affecting the abdominal aorta when the individual's clinical history documents (either):

- Recurrent or persistent symptoms including abdominal or back pain despite medical management
- Ischemia of the visceral organs including the bowels and solid organ

Indications - Iliac Artery Aneurysm Repair

Criteria

Endovascular repair of iliac artery by deployment of an iliac branched endograft (CPT® 34717) is medically necessary when clinical history documents of **all** of the following criteria:

- Endovascular abdominal aortic aneurysm (AAA) repair is planned to be performed at the same time as the internal iliac artery (IIA) procedure
- The ipsilateral common iliac artery demonstrates an aneurysm greater than 3.5cm in diameter
- There is contralateral internal iliac artery occlusion

Bifurcated-bifurcated aneurysm repair

Bifurcated-bifurcated aneurysm repair of aorto-iliac aneurysms (CPT® 34718) is considered experimental, investigational, and unproven because the effectiveness of this approach has not been established.

Endovascular repair of isolated internal iliac artery aneurysm

Endovascular intervention with arterial stenting, embolization or embolization and stenting is medically necessary in individuals with any of the following:

- Symptomatic aneurysm of any size
- Asymptomatic internal iliac aneurysm measuring greater than or equal to 3.0cm
- Evidence of bleeding from aneurysm such as active extravasation from the vessel or hematoma along side of vessel.

Evidence Discussion

The three most common pathology types occurring in the abdominal aorta are aneurysm, dissection and occlusion. Aortic dissection within the abdomen is often an extension of a thoracic dissection and should follow thoracic aortic imaging and treatment recommendations for acute cases. Chronic abdominal aortic dissections may degenerate into aneurysms over time and should be followed according to standard

abdominal aneurysm intervention recommendations. Occlusive disease within the aorta often involves the mesenteric vessels as well as the adjacent iliac arteries and should follow imaging and treatment guidelines for lower extremity occlusive disease.

Abdominal aortic aneurysmal disease is usually asymptomatic and discovered incidentally. Symptomatic aortic aneurysms are at high risk for rupture with a significant mortality risk and should be treated emergently with imaging and intervention as indicated. Chronic aneurysms require periodic monitoring to determine their rupture risk.

There are certain criteria for repair:

- Abdominal aorta ≥5.5 cm documented by imaging

Note:

National guidelines support repair of asymptomatic abdominal aortic aneurysm of ≥5.5cm in males and ≥5.0cm in females. Evidence shows sex related variations in aortic size contributing to a higher risk for rupture at a given aortic diameter in females.

- Abdominal aortic aneurysm of any size ≥ 3cm in an individual with a thoracoabdominal aneurysm in which the thoracic aortic aneurysm is ≥ 6cm documented by imaging
- Mycotic aneurysm of any size documented by imaging or elevated WBC or positive culture
- Individuals with a growth rate of ≥0.5 cm/yr in an aorta that is between 3cm to 5 cm in diameter
- Individuals with a small aneurysm between 3cm and 5 cm with extensive mural thrombus that is embolizing to the lower extremities

The anatomic location of abdominal aortic aneurysms allows ultrasound to be used as a primary imaging modality in most cases for surveillance. Ultrasound uses no radiation or contrast, can be performed in an outpatient setting and is cost-effective. CT/MR imaging is usually reserved for intervention planning or for cases where ultrasound has been found to have technical limitations related to body habitus or other structural issues.

Clinical decision-making for the treatment of chronic aneurysms takes into account the risk of rupture based on size and the morbidity of repair including cardiopulmonary events, renal dysfunction, stroke, limb loss, infection and death. Endovascular aortic repair has become the predominant approach for cases that meet for intervention. Open aortic repair tends to have higher perioperative risks and is usually reserved for anatomically challenging cases for both aneurysmal and occlusive disease. Endovascular repairs have lower perioperative risks, but they do require additional postoperative surveillance as they have a higher rate of technical complications. Endovascular intervention planning does require preoperative imaging with CT/MR for proper device selection.

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Additional factors that may warrant abdominal aortic imaging and intervention include saccular or mycotic aneurysm formation, penetrating ulcer, trauma, connective tissue disease and familial/genetic disorders that predispose individuals to dissection and aneurysm formation. Abdominal aortic aneurysms may be isolated; however, they may extend into the pelvis to include the iliac arteries. Concomitant repair of aortic and iliac segments is frequently indicated due to their proximity.

Patients with isolated internal iliac artery aneurysms may be managed with open or endovascular repairs. Open surgical reconstruction can be difficult due to the location deep in pelvis and surrounding structures. Most often reconstruction is not possible or carries increased risk and ligation or embolization is the best treatment. For symptomatic patients, those with evidence of bleeding from the aneurysm or asymptomatic patients with large internal iliac aneurysms, endovascular embolization with or without stenting to cover the origin is safe and effective with less risk compared to open repair or ligation.

Procedures to address abdominal aortic pathology fall into two broad categories open surgical repair conducted via a laparotomy and endovascular aortic repair (EVAR) which is a minimally invasive approach via the femoral artery to treat aortic pathology with a stent graft. CPT® Code 34717 is typically billed in conjunction with any of the following CPT® Codes: 34703, 34704 ,34705, or 34706.

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Endoleaks

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Endoleaks - Coding

Procedure codes	CPT®
Type 2 Endoleak	
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; arterial, other than hemorrhage or tumor (e.g., congenital or acquired arterial malformations, arteriovenous malformations, arteriovenous fistulas, aneurysms, pseudoaneurysms)	37242
Type 1, 3, and 5 Endoleak	
Endovascular repair of infrarenal aorta by deployment of an aorto-aortic tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the aortic bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the aortic bifurcation; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34701
Endovascular repair of infrarenal aorta by deployment of an aorto-aortic tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the aortic bifurcation, and all angioplasty/stenting performed from the level of the renal arteries to the aortic bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34702

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Procedure codes	CPT®
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-uni-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34703
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-uni-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34704
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-bi-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34705
Endovascular repair of infrarenal aorta and/or iliac artery(ies) by deployment of an aorto-bi-iliac endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, all endograft extension(s) placed in the aorta from the level of the renal arteries to the iliac bifurcation, and all angioplasty/ stenting performed from the level of the renal arteries to the iliac bifurcation; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34706

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Procedure codes	CPT®
Endovascular repair of iliac artery by deployment of an ilio-iliac tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally to the iliac bifurcation, and treatment zone angioplasty/stenting, when performed, unilateral; for other than rupture (e.g., for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation)	34707
Endovascular repair of iliac artery by deployment of an ilio-iliac tube endograft including pre-procedure sizing and device selection, all nonselective catheterization(s), all associated radiological supervision and interpretation, and all endograft extension(s) proximally to the aortic bifurcation and distally to the iliac bifurcation, and treatment zone angioplasty/stenting, when performed, unilateral; for rupture including temporary aortic and/or iliac balloon occlusion, when performed (e.g., for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation, traumatic disruption)	34708

Management of Endoleak after EVAR

Type 1a or Type 1b endoleak (involves proximal or distal fixation sites)

- **Any** of the following procedures is considered medically necessary to repair **all** Type 1 endoleaks:
  - Graft extension
  - Fenestrated/branched graft repair
  - Open repair

Type 2 endoleak (due to side branch vessels)

- Post EVAR repair of a Type 2 endoleak by embolization of aortic side branches or aortic sac is medically necessary when there is documentation of Sac enlargement >5mm from prior imaging

Type 3 endoleak (graft component separation or fabric tear)

- **Any** of the following procedures is considered medically necessary to repair all Type 3 endoleaks:
  - Graft bridging stent
  - Repeat EVAR
  - Open surgical repair

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Type 4 endoleak (due to graft porosity)

- Repair of a Type 4 endoleak is considered **not** medically necessary

Type 5 endoleak (sac expansion without evidence of endoleak)

- Repair of a Type 5 endoleak with repeat EVAR or open surgical repair is medically necessary when both of the following conditions apply:
  - There is sac growth >1cm
  - There is no evidence of type 1, 2, or 3 endoleak

Evidence Discussion

Endoleaks following endovascular aneurysm repair (EVAR) for abdominal aortic aneurysms are a known complication of the procedure. Type 1 and 3 endoleaks are the most concerning as they expose the aneurysm sac to systemic pressure and are associated with a risk of rupture. Type 2 endoleaks are more common but 30-50% will resolve without intervention. Type 4 and Type 5 endoleaks were reported early in the history of EVAR but are rare with the current generation of EVAR.

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Visceral and Popliteal Aneurysms

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Coding for Treatment of Visceral and Popliteal Aneurysms

Procedure	CPT®
Lower extremity - femoral/popliteal, non-atherectomy	
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37267
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37268
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37269

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Procedure	CPT®
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37270
Non-lower extremity intervention	
Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; initial artery	37236
Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; each additional artery (List separately in addition to code for primary procedure)	37237

Embolization	CPT®
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; arterial, other than hemorrhage or tumor (e.g., congenital or acquired arterial malformations, arteriovenous malformations, arteriovenous fistulas, aneurysms, pseudoaneurysms)	37242
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; for arterial or venous hemorrhage or lymphatic extravasation	37244

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Popliteal Aneurysm

Indications

Endovascular repair of popliteal artery aneurysms is indicated under the following conditions:

- Asymptomatic-popliteal artery aneurysm diameter ≥2.0 cm on ultrasound, CT or MRI.
- Symptomatic-popliteal artery aneurysms with diameter ≥1.5 cm on US, CT or MRI and documentation of **both** of the following:
  - Mural thrombus within the aneurysm
  - Evidence of new onset claudication, critical limb threatening ischemia or blue toe syndrome

Evidence Discussion

Popliteal artery aneurysms are defined as the popliteal artery measuring > 1.5 cm or 1.5x larger than its normal size (5-9 mm). Most popliteal artery aneurysms are asymptomatic and may be associated with other aneurysms including AAA, iliac and contralateral popliteal artery aneurysms. Symptoms usually result from acute or chronic limb ischemia caused by distal embolization to the tibial runoff vessels with or without associated aneurysm thrombosis. The risk of complications increases with aneurysm size and development of thrombus.

Visceral Artery Aneurysm or Pseudoaneurysm (PSA)

- Coil embolization is medically necessary to treat visceral artery aneurysm or pseudoaneurysm (PSA) when diagnostic imaging (CTA, MRA, US, angiogram) documents **any** of the following:
  - hepatic artery aneurysm ≥2.0cm
  - celiac artery aneurysm ≥2.0cm and any size celiac artery PSA
  - colic artery aneurysm any size
  - gastric and gastroepiploic artery aneurysm of any size
  - jejunal and ileal artery aneurysm ≥2.0cm
  - superior mesenteric artery (SMA) aneurysm of any size
  - pancreaticoduodenal and gastroduodenal artery aneurysm of any size
  - splenic artery aneurysm ≥3.0cm and any size splenic artery PSA
  - renal artery aneurysm ≥3.0cm

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Peripheral Vascular, Non-coronary Stents

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General Information

Atherosclerosis is a systemic disease, and individuals will often present with multi-level disease. Intraoperative decision making may lead to changes in the original procedure requested.

Coding

Procedures

Peripheral vascular non-coronary stent procedures

Procedure description	CPT®
Non-lower extremity intervention	
Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; initial artery	37236
Transcatheter placement of an intravascular stent(s) (except lower extremity artery(s) for occlusive disease, cervical carotid, extracranial vertebral or intrathoracic carotid, intracranial, or coronary), open or percutaneous, including radiological supervision and interpretation and including all angioplasty within the same vessel, when performed; each additional artery (List separately in addition to code for primary procedure)	37237
Transluminal balloon angioplasty (except lower extremity artery(ies) for occlusive disease, intracranial, coronary, pulmonary, or dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same artery; initial artery	37246

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Procedure description	CPT®
Transluminal balloon angioplasty (except lower extremity artery(ies) for occlusive disease, intracranial, coronary, pulmonary, or dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same artery; each additional artery (List separately in addition to code for primary procedure)	37247
Lower extremity - iliac	
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, initial vessel	37254
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37255
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, initial vessel	37256
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37257

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Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37258
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37259
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37260
Revascularization, endovascular, open or percutaneous, iliac vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37261
Intravascular lithotripsy(ies), iliac vascular territory, including all imaging guidance and radiological supervision and interpretation necessary to perform the intravascular lithotripsy(ies) within the same artery (List separately in addition to code for primary procedure)	37262
Lower extremity - femoral/popliteal	

Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, initial vessel	37263
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37264
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, initial vessel	37265
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37266
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37267

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Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37268
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37269
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37270
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37271
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37272

Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37273
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37274
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37275
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37276

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Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37277
Revascularization, endovascular, open or percutaneous, femoral and popliteal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37278
Intravascular lithotripsy(ies), femoral and popliteal vascular territory, including all imaging guidance and radiological supervision and interpretation necessary to perform the intravascular lithotripsy(ies) within the same artery (List separately in addition to code for primary procedure)	37279
Lower extremity - tibial	
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, initial vessel	37280
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37281

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Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, initial vessel	37282
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37283
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37284
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37285
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37286

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Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37287
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37288
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37289
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37290
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the atherectomy and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37291

Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; straightforward lesion, initial vessel	37292
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37293
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; complex lesion, initial vessel	37294
Revascularization, endovascular, open or percutaneous, tibial and peroneal vascular territory, with transluminal stent placement, with transluminal atherectomy, including transluminal angioplasty when performed, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the stent placement, atherectomy, and angioplasty when performed, within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37295
Inframalleolar	

Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, inframalleolar vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, initial vessel	37296
Revascularization, endovascular, open or percutaneous, inframalleolar vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; straightforward lesion, each additional vessel (List separately in addition to code for primary procedure)	37297
Revascularization, endovascular, open or percutaneous, inframalleolar vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, initial vessel	37298
Revascularization, endovascular, open or percutaneous, inframalleolar vascular territory, with transluminal angioplasty, including all maneuvers necessary for accessing and selectively catheterizing the artery and crossing the lesion, including all imaging guidance and radiological supervision and interpretation necessary to perform the angioplasty within the same artery, unilateral; complex lesion, each additional vessel (List separately in addition to code for primary procedure)	37299

Coding

Intravascular lithotripsy c-codes

Description	HCPCS
Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), except tibial/peroneal; with intravascular lithotripsy, includes angioplasty within the same vessel(s)	C9764
Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), except tibial/peroneal; with intravascular lithotripsy, and transluminal stent placement(s), includes angioplasty within the same vessel	C9765

Description	HCPCS
Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), except tibial/peroneal; with intravascular lithotripsy and atherectomy, includes angioplasty within the same vessel(s)	C9766
Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), except tibial/peroneal; with intravascular lithotripsy and transluminal stent placement(s), and atherectomy, includes angioplasty within the same vessel(s)	C9767
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery(ies), with intravascular lithotripsy, includes angioplasty within the same vessel (s), when performed	C9772
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery(ies); with intravascular lithotripsy, and transluminal stent placement(s), includes angioplasty within the same vessel(s) when performed	C9773
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery(ies); with intravascular lithotripsy and atherectomy, includes angioplasty within the same vessel (s), when performed	C9774
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery(ies); with intravascular lithotripsy and transluminal stent placement(s), and atherectomy, includes angioplasty within the same vessel (s), when performed	C9775

Peripheral Vascular, Non-coronary Stent - Criteria

General Guidelines

It is expected that all lesions needing treatment will be addressed in one procedure. Staging of interventions is **not** medically necessary unless there is justification in the medical record. Valid reasons include any of the following:

- Patient instability
- Fluoroscopy use in excess of what is widely considered a safe radiation dosage
- A need to convert to general anesthesia but resources are not available
- Full dose contrast volume given is greater than 200 ml

Upper Extremity

Brachiocephalic arteries

PTA and stenting are medically necessary for treatment of **any** of the following documented conditions:

- Symptomatic subclavian steal syndrome documented by **all** of the following:
  - Episodic dizziness
  - high-grade stenosis or occlusion of the proximal subclavian artery demonstrated on advanced imaging
  - Presence of reversal of flow in the left vertebral artery on carotid/subclavian duplex ultrasound
- Upper extremity claudication when there is documentation of fatigue with exertion of the arm and **both** of the following:
  - Symptoms are relieved with rest
  - Symptoms recur with activity at predictable intervals
- Ischemic rest pain of the arm and hand when **one** of the following criteria is met:
  - Objective measurements demonstrate severe ischemia on noninvasive studies
  - High-grade stenosis seen on advanced imaging
- Non-healing tissue ulceration or focal gangrene of the digits.
- Stenotic inflow arteries of an arteriovenous fistula when the inflow arteries, such as the innominate or brachiocephalic arteries demonstrate high-grade stenosis on advanced imaging

Visceral Artery

Renal artery

PTA and stenting for renal artery stenosis (RAS) are considered medically necessary when there is documentation of **any** of the following:

- Renal artery dissection
- Renal artery aneurysm ≥3.0cm
- Renal artery stenosis greater than 50% in a transplanted kidney
- In instances of severe hypertension leading to flash pulmonary edema or acute coronary syndrome
- Resistant or uncontrolled HTN (≥180SBP or ≥120DBP) with failure of maximally tolerated doses of at least three antihypertensive agents, one of which is a thiazide diuretic, or intolerance to medications
- Ischemic nephropathy due to bilateral renal artery stenosis with eGFR <45 cc/min (stage G3b or higher chronic kidney disease (CKD))

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- Ischemic nephropathy due to unilateral stenosis in the setting of a single functioning kidney when eGFR <45 cc/min (stage G3b or higher chronic kidney disease (CKD))

PTA and stenting is **not** medically necessary for RAS under the following conditions:
- Unilateral, solitary or bilateral RAS with controlled BP and normal renal function
- Unilateral, solitary, or bilateral RAS with kidney size <7cm in pole-to-pole length
- Unilateral, solitary, or bilateral RAS with chronic end stage renal disease on hemodialysis ≥3 months
- Unilateral, solitary, or bilateral renal artery chronic total occlusion

Intervention for recurrent stenosis of the renal artery after endovascular intervention is considered medically necessary for the following scenarios:
- Recurrent hypertension, flash pulmonary edema or worsening renal failure and **one** of the following:
  - Duplex imaging with PSV ≥ 225 cm/sec and RAR≥ 3.5
  - CTA, MRA or angiogram demonstrating ≥ 50% stenosis
- Asymptomatic individual with **one** of the following:
  - Duplex imaging with PSV ≥ 395 cm/sec and RAR≥ 5.1
  - CTA, MRA or angiogram demonstrating ≥ 70% stenosis

Mesenteric vessels

Treatment of the mesenteric vessels is medically necessary when there is documentation of **both** of the following:
- Symptoms concerning for chronic arterial insufficiency including **any** of the following:
  - Postprandial abdominal pain or bloating
  - Diarrhea
  - Food fear
  - Weight loss
- Prior imaging demonstrates **at least two** mesenteric vessels with critical high-grade stenosis or occlusion

Intervention for recurrent stenosis in the superior mesenteric artery (SMA) after endovascular intervention is medically necessary for individuals with recurrent abdominal pain, nausea, vomiting or early satiety and **one** of the following:
- Duplex imaging with PSV ≥ 350 cm/sec
- CTA, MRA or angiogram demonstrating ≥ 50% stenosis

Intervention for recurrent stenosis of the celiac artery after endovascular intervention is medically necessary for the following individuals with recurrent abdominal pain, nausea, vomiting or early satiety and **one** of the following:
- Duplex imaging with PSV ≥ 440 cm/sec
- CTA, MRA or angiogram demonstrating ≥ 50% stenosis

Post-Transplant arterial or venous intervention is medically necessary for individuals with a history of renal transplant, hepatic transplant, pancreatic transplant, heart transplant, lung transplant or small bowel transplant with **one** of the following:

- Arterial stenosis of ≥ 50% involving the anastamosis, transplant artery or donor artery for the transplanted organ on duplex, CT, MRI or angiography
- Venous stenosis of ≥ 30% involving the anastamosis, Portal Vein or outflow vein for the transplanted organ on duplex, CT, MRI or angiography

Lower Extremity Arterial Indications

Treatment of Claudication

Initial Treatment

Treatment of stenotic or occluded arteries perfusing the lower extremities (aorto-iliac, superficial femoral, popliteal) is considered medical necessary when **all** of the following are met:

- Treatment of target lesion will allow in-line flow to the foot, with at least one run-off vessel
- Lifestyle-limiting claudication for aorto-iliac, superficial femoral, or popliteal arteries when there is documentation of **all** of the following:
  - A failed trial of three months of provider directed conservative therapy which includes structured exercise walking program with documented follow-up during the trial if no structured program is available in the individual's home area.
  - Functional limitations that significantly impact the quality of life and/or occupation of the individual
  - Risk factor modification including smoking cessation, optimization of lipids, and glycemic control are part of the medical evaluation and management
  - Symptoms correspond with the location of arterial insufficiency
    - aorto-iliac - lower back, hip, buttock, or thigh
    - superficial femoral - claudication in the calf muscle area
    - popliteal - calf
- Imaging performed prior to the planned procedure confirms location and degree of stenosis (≥50%) by objective criteria

Repeat intervention

- In an individual with recurrent claudication who has previously undergone endovascular intervention (angioplasty or stent) or bypass in the lower extremity arteries (aorto-iliac, superficial femoral) for claudication is considered medically necessary for any **one** of the following:
  - Previous Endovascular Intervention in the setting of **any** of the following findings:
    - Drop in ABI of ≥0.15 on routine surveillance

        - Duplex ultrasound finding of peak systolic velocity (PSV) ≥190 cm/s
        - Velocity ratio ≥1.5
        - ≥50% stenosis on CTA, MRA or angiogram
    - Previous Lower Extremity Bypass in the setting of **any** of the following findings:
        - Drop in ABI of ≥0.15 on routine surveillance
        - Vein bypass: PSV ≥180 cm/s
        - Velocity ratio ≥2
        - End diastolic velocity (EDV) <45 cm/s
        - ≥50% stenosis on CTA, MRA or angiogram
- In asymptomatic individuals re-intervention is medically necessary for **either** of the following:
    - Previous endovascular intervention with high-grade stenosis with **any** of the following:
        - PSV ≥275 cm/s
        - Velocity ratio ≥3.5
    - Previous lower extremity vein bypass with **any** of the following:
        - PSV ≥180 cm/s
        - Velocity ratio ≥2
        - EDV <45 cm/s
        - Low graft velocity <45 cm/s

Lesion descriptors

- Straightforward lesions are lesions identified on preoperative imaging as a stenosis
- Complex lesions are lesions identified on preoperative imaging as an occlusion.

Atherectomy - claudication

Atherectomy, with or without angioplasty and stenting, is medically necessary for claudication when **all** of the following are met:

- Criteria for intervention have been met as described above in Initial treatment and Repeat intervention
- Lesions result in ≥70% stenosis caused by a highly calcified eccentric plaque

Repeat atherectomy for recurrent infrapopliteal stenosis/occlusion without evidence of critical limb ischemia is not supported by medical evidence and is not considered medically necessary.

Peripheral vascular, non-coronary stents non-indications

Stent placement in infrapopliteal vessels is not medically necessary except in rare cases where it is deemed necessary intraoperatively.

PTA or stent for any indication is **not** considered medically necessary in **either**:

- Individuals who are asymptomatic
- Lesions that are not high-grade or critical (≥50%)
- Routine stent placement, atherectomy, or lithotripsy, in infra-popliteal and infra-malleolar vessels is **not** considered medically necessary due to the lack of evidence of the benefit.
- Intervention for below knee vessels is **not** considered medically necessary for the routine treatment of claudication due to lack of evidence of the benefit.

Treatment of Critical Limb Ischemia

Initial Treatment

- The presence of critical limb ischemia must be documented in the clinical note by **any** of the following:
  - Non-healing ischemic and mixed arterial/venous wounds present for >two weeks despite ongoing provider directed wound care.
  - Gangrene of any duration when revascularization is felt to be needed to allow for minor amputation
  - Ischemic rest pain of the foot demonstrated by symptoms suggestive of rest pain (e.g. pain in the foot while recumbent and relieved when foot is in a dependent position) with **any** of the following:
    - Ankle Brachial Index (ABI) <0.5 in non diabetics
    - Toe brachial index (TBI) <0.6
    - Monophasic waveforms at the feet on noninvasive studies in individuals noted to have non compressible vessels on ABI such as diabetics or individuals with end stage renal disease
    - Documented infrapopliteal disease of greater than or equal to 50% stenosis

Repeat Intervention

- Re-intervention in a individual who presents with critical limb ischemia who has previously undergone endovascular intervention for critical limb ischemia or claudication in the aortoiliac, femoralpopliteal, or infrapopliteal areas is considered medically necessary in the presence of **both** of the following:
  - Symptoms of critical limb ischemia defined as **one** of the following:
    - Progression of wound as defined by any increase in size of the wound
    - Lack of 50% area reduction in four weeks.
    - Recurrence of rest pain
  - Presence of any of the following objective findings:
    - Previous endovascular intervention with **any** of the following:
      - Drop in ABI of ≥0.15 on routine surveillance

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    - duplex ultrasound finding of peak systolic velocity (PSV) ≥190 cm/s
    - Velocity ratio ≥1.5
    - ≥50% stenosis on CTA, MRA or angiogram
  - Previous lower extremity bypass with **any** of the following:
    - Drop in ABI of ≥0.15 on routine surveillance
    - Vein bypass: PSV ≥180 cm/s
    - Velocity ratio ≥2
    - end diastolic velocity (EDV) <45 cm/s
    - low graft velocity <45 cm/s, or ≥50% stenosis on CTA, MRA or angiogram
- In asymptomatic individuals re-intervention if one of the following: If Vein bypass: PSV ≥180 cm/s or Velocity ratio ≥2, or EDV <45 cm/s If Prosthetic bypass: low graft velocity <45 cm/s Previous endovascular intervention with high-grade stenosis defined as PSV ≥275 cm/s or Velocity ratio ≥3.5

Lesion descriptors

- Straightforward lesions are lesions identified on preoperative imaging as a stenosis
- Complex lesions are lesions identified on preoperative imaging as an occlusion.

Inframalleolar Angioplasty

Inframalleolar angioplasty is indicated for patients with active tissue loss and lack of arterial flow distal to the ankle (GLASS descriptor P2).

Imaging Findings to support Inframalleolar intervention:

- CTA/MRA/Angiogram: Occluded distal ATA/DP at ankle or occluded PTA/Tarsal branches at ankle.
- Duplex: lack of flow in the ATA/DP or PTA/Tarsal branches at the ankle.
- Pedal acceleration time (PAT) >225ms

Atherectomy-Critical limb ischemia

Atherectomy is medically necessary when the clinical history documents critical limb ischemia, including tissue loss and ischemic rest pain, when the individual would otherwise satisfy criteria for intervention as described above in **Initial Intervention** and **Repeat intervention**

Intravascular Lithotripsy

Intravascular lithotripsy is medically necessary when the clinical history documents critical limb ischemia, including tissue loss and ischemic rest pain, when the individual would otherwise satisfy criteria for intervention as described above in **Initial Intervention** and **Repeat intervention and** evidence of 50% stenosis or occlusion due to moderate or severely calcified plaque in the iliac or femoralpopliteal on duplex, CTA, MRA or prior angiogram.

Glass Criteria Inframalleolar Vessels

Classification	Inframalleolar/pedal descriptors
P0	• Target artery crosses ankle into the foot • Pedal arch is intact
P1	• Target artery crosses ankle into the foot • Pedal arch is absent or severely disease
P2	• No target artery crossing ankle into the foot

Evidence Discussion

Atherosclerotic plaque can lead to stenosis and even occlusion of the peripheral vasculature. High-grade stenosis can lead to chronic ischemia of the end tissue, with resultant symptoms of arterial insufficiency. In the lower extremities, this can lead to claudication and/or critical limb ischemia. Treatment of stenotic or occlusive lesions can be performed with angioplasty alone which involves placing a balloon through a wire across the lesion and dilating the lesion to residual stenosis of <30%. Stenting involves placing a metal stent permanent implant across a lesion dilating it with a balloon and leaving it in place effectively crushing and fixing the plaque against the arterial wall. Angioplasty can be performed alone or in conjunction with stenting. A stent may be placed as a planned adjunct to PTA rather than in response to a sub-optimal or failed PTA (so-called primary stent deployment).

Coverage for non-coronary vascular stents depends on the use of an FDA-approved stent for an FDA approved indication

Upper/lower extremity intervention

Peripheral arterial disease (PAD)

Peripheral arterial disease (PAD) is defined as chronic, atherosclerotic occlusive disease of the lower extremities. The vast majority of patients with PAD are asymptomatic. A much smaller group has symptomatic PAD, consisting of intermittent claudication(IC), rest pain or tissue loss.

The natural history of PAD for asymptomatic and IC patients is relatively benign. It is estimated that 7% (4%–11%) of asymptomatic patients deteriorate to IC over a 5-year period. Multiple studies have established that patients with IC are at very low risk of major amputation (<1% per year).

For these reasons, the first line of treatment for patient with IC is risk factor reduction/ modification and exercise therapy. A meta-analysis of 1200 patients determined that exercise therapy, compared with placebo or usual care, provides an overall

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improvement in walking ability of 50% to 200%, with improvements maintained for up to 2 years. Additionally, with intensive medical management, <5% of patients will develop symptoms of advanced ischemia, such as ischemic rest pain, tissue loss, or require amputation.

Symptomatic peripheral artery disease of the lower extremities due to calcified plaque remains difficult to treat endovascularly with increased risks of flow-limiting dissection, embolization and under expansion of stents compared to non-calcified plaque. Intravascular lithotripsy balloons have been studied in both the coronary and peripheral arteries as a way to modify stenoses due to moderately-to-severely calcified plaque.

A pooled analysis of the initial 5 studies for Intravascular Lithotripsy (IVL) in peripheral artery disease was published by Madhavan et al in 2020. This included 336 patients with moderate to severe calcified stenosis in the iliac, common fenoral, femoralpopliteal or tibial arteries. The results showed an average percent reduction in stenosis by 55.1% with a combined complication rate of 1.2%.[1]

The DISRUPT PAD III randomized controlled trial studied 306 patients with moderately-to-severely calcified femoralpopliteal plaque. It compared IVL to PTA for vessel preparation prior to drug coated balloon (DCB)3. Primary patency was significantly higher in the IVL group than PTA at 1 year (80.5 % vs 68%, P<0.0001) and 2 years (70.3% vs 51.3%, P<0.03). The requirement for provisional stenting was significantly lower in the IVL group (4.6% vs 18.3%, P<0.0001). Freedom from target lesion revascularization and restenosis rates were similar between the groups. The DISRUPT PAD III Observation Study expanded on this with a worldwide registry that enrolled 1373 patients with 1677 lesions with core lab adjudication of real-world patients to assess safety and performance with moderate-to-severe calcified lesions.[2]1 Patient characteristics included diabetes in 56%, smoking in 78%, renal insufficiency in 27% with 29.7% of those patients on active dialysis. Target vess+el distribution include femoralpopliteal (61%), iliac (15.8%), common femoral artery (10.7%) and infrapopliteal arteries (12..8%). Lesion characteristics included 31.1% chronic total occlusions (CTOs) and 19.3% had lesion lengths ≥ 15 cm. Treatment after IVL use was decided by the individual provider. Average stenosis prior to IVL was 81% and this was reduced to 33% stenosis after IVL and 24% after adjunct intervention. These results were consistent across all the vessels from Iliac to infrapopliteal arteries.This was consistent to the PAD III RCT where pre-intervention average stenosis was 85% and reduced to 27% after IVL. Rates of flow-limiting dissection was 0.9%, perforation was 0.8% and distal embolization was 0.2%.

[1] Madhavan MV, Shahim B, Mena-Hurtado C, et al. Efficacy and safety of intravascular lithotripsy for the treatment of peripheral arterial disease: an individual patient-level pooled data analysis. *Catheter Cardiovasc Interv*. 2020;95(5):959-968. doi:10.1002/ccd.28729.

[2] Armstrong EJ, Adams G, Soukas PA, et al. Intravascular lithotripsy for peripheral artery calcification: 30-day outcomes from the Disrupt PAD III observational study. *J Endovasc Ther*. 2024;Published online Oct 18. doi:10.1177/15266028241283716.

Based on the available data, IVL is safe and effective in treating moderately-to-severely calcified stenosis across all lower extremity artery beds. Studies confirm a decreased need for provisional stenting and less complications compared to PTA.

Progression of distal peripheral artery disease into the inframalleolar vessels in patients with active ulcers or tissue loss is associated with poorer outcomes than patients without inframalleolar disease.1-4 Intervention on the inframalleolar/pedal arteries may increase outflow and potentially allow salvage of of limbs in patients with active wounds.2-4 There is limited data reported for patients with ischemic rest pain and no reported studies on inframalleolar interventions for claudication. Given the lack of durability and proven outcomes, inframalleolar and pedal intervention should be limited to patients with active ulcers or tissue loss and is not indicated in patients with rest pain or claudication.

Renal/visceral

Failure of medical therapy to control hypertension in addition to duplex or CT/MR imaging that confirms renal artery stenosis is an indication for intervention. Some additional scenarios including fibromuscular dysplasia, renal artery dissection, acute renal failure due to flow-limiting lesions or renal artery stenosis associated with a transplanted kidney may also warrant intervention and are generally considered on a case-by-case basis. Endovascular techniques are the most common approach for treatment of renal artery stenosis. Intervention is not indicated in the absence of uncontrolled hypertension. Additionally, findings consistent with advanced renal disease including hemodialysis and chronic renal artery occlusion are not recommended for intervention.

Primary stenting is medically necessary when Percutaneous Transluminal Angioplasty (PTA) alone is not expected to provide a durable result for individuals with either of the following: Arterial occlusions that carry a high risk for distal embolization or rapid recurrence Occlusive lesions such as significantly calcified lesions, eccentric lesions, lesions related to external compression, and ostial lesions.

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Peripheral Vascular Intervention

Venous Intervention Guidelines

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Endovenous Ablation

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General information

This section applies to the indications for endovenous ablation (thermal and non-thermal methods) treatment of the following veins

- Great saphenous vein (GSV)
- Small saphenous vein (SSV)
- Anterior Saphenous Vein (AAGSV)
- Posterior Accessory Great Saphenous Vein (PAGSV)
- Perforator veins

Coding

Procedures

Procedure description	CPT®
Venous ablation - thermal options	
Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; first vein treated	36475
Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; subsequent vein(s) treated in a single extremity, each through separate access sites (List separately in addition to code for primary procedure)	36476
Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, laser; first vein treated	36478
Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, laser; subsequent vein(s) treated in a single extremity, each through separate access sites (List separately in addition to code for primary procedure)	36479
Venous ablation - non-thermal options	

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Procedure description	CPT®
Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, mechanochemical; first vein treated	36473
Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, mechanochemical; subsequent vein(s) treated in a single extremity, each through separate access sites (List separately in addition to code for primary procedure)	36474
Endovenous ablation therapy of incompetent vein, extremity, by transcatheter delivery of a chemical adhesive (e.g., cyanoacrylate) remote from the access site, inclusive of all imaging guidance and monitoring, percutaneous; first vein treated	36482
Endovenous ablation therapy of incompetent vein, extremity, by transcatheter delivery of a chemical adhesive (e.g., cyanoacrylate) remote from the access site, inclusive of all imaging guidance and monitoring, percutaneous; subsequent vein(s) treated in a single extremity, each through separate access sites (List separately in addition to code for primary procedure)	36483

Endovenous Ablation - Criteria

Endovenous ablation is the preferred treatment for saphenovenous reflux of the following truncal veins:

- Greater saphenous vein
- Small saphenous vein
- Anterior saphenous vein - above knee
- Posterior accessory saphenous vein - above knee

Treatment of saphenovenous reflux is medically necessary when individuals have symptoms attributable to their incompetent veins and not for the purposes of cosmesis.

Treatment of saphenovenous reflux is medically necessary when **both** of the following apply:

- Symptoms of venous reflux as documented by a CEAP score of at least 2 or greater OR a VCSS score of 6 or greater.
- Results of a recent venous duplex (within 6 months before planned procedure) demonstrating **all** of the following:
  - Presence of significant pathologic reflux measuring at least 500ms:
    - In at least two segments within any of the following veins to be treated
      - great saphenous vein above the knee (i.e. saphenofemoral junction, thigh, knee and calf)

        - small saphenous vein (i.e. saphenopopliteal junction and midcalf)
    - In at least one segment within any of the following veins to be treated:
        - Anterior saphenous vein
        - Posterior accessory saphenous vein
        - Greater saphenous vein (below the knee)
  - Absence of ipsilateral acute DVT or chronic multisegmental femoralpopliteal occlusion

With the exception of active venous ulcers, treatment of up to two truncal veins per extremity can be included in a single request. Further requests will be considered if symptoms fail to improve after 12 weeks

Saphenous vein treatment using different modalities (endovenous ablation, phlebectomy, and sclerotherapy) may be considered if the following are met:

- Small saphenous vein may be treated with one modality in a single episode of care. Repeat request for treatment of the saphenous vein in the absence of recurrent reflux or recurrent symptoms does not meet for medical necessity based on clinical evidence.
- The thigh extension of the small saphenous vein (vein of Giacomini) can be treated in the same episode of care as the small saphenous vein or 12 weeks from prior intervention.
- Greater saphenous vein may be treated as follows:
  - Above and below knee segments of the vein with a single modality in one episode of care
  - Two different modalities to treat the above knee and below knee segments of the greater saphenous vein concurrently in one episode of care
  - Subsequent treatment of the below-knee saphenous vein with a different modality following treatment of the above-knee saphenous vein may be considered if symptoms fail to improve after a minimum of 12 weeks from the previous intervention.
  - The above knee or below knee segment of the greater saphenous is expected to be treated with one modality in one episode of care. Repeat treatment of the above knee or below knee segment of the greater saphenous vein is not supported.
- Above knee and below knee anterior/posterior accessory saphenous veins may be treated in one episode of care by any modality
  - Infrapopliteal accessory branches should follow recommendations for tributary veins if not treated during the same episode of care as the above knee accessory branches

Treatment of pathologic perforators is medically necessary when there is documentation of **all** of the following:

- Active venous stasis ulcer

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- A recent duplex US performed within the past 6 months demonstrating signs of perforator vein incompetence with both:
  - Reflux ≥500ms
  - Vein diameter ≥3.5 mm
- Perforator vein is located in the vicinity of an active ulcer
- Saphenous veins draining the ulcer area have been previously eliminated or do not exhibit pathologic reflux

Evidence Discussion

Endovenous Ablation

Duplex ultrasound can identify lower extremity superficial venous truncal reflux as a reverse flow lasting ≥ 500 ms within one or more vein segments which often includes a valve. Truncal vein reflux affecting the Great Saphenous Vein (GSV), Small Saphenous Vein (SSV), Anterior Saphenous Vein (ASV) or thigh Posterior Accessory Saphenous Vein (PAGSV) can lead to significant lower extremity discomfort, edema and potentially ulceration. Reflux within varicose veins as well as saphenous tributaries can also be the cause of significant symptoms. Medical management including leg elevation, exercise, weight loss and compression stockings can lead to significant improvement in symptoms and decrease the risk of skin ulceration in many patients but is not effective for all patients and does not address the underlying anatomic disease process.

For patients with symptomatic venous reflux on duplex imaging , endovenous therapy can ameliorate symptoms, provides improved quality of life, and may decrease the risk of future ulceration. For patients with active ulceration, significant leg symptoms, and/or significant leg edema and superficial venous reflux on venous duplex, intervention to ablate the associated incompetent superficial and contributing perforator veins can facilitate healing. GSV reflux can be present in the above- or below-knee segments, or both (axial reflux). The saphenous nerve lies adjacent to the the below-knee GSV; similarly, the sural nerve lies close to the SSV in its mid-distal calf portion. Thermal ablation and stripping of the distal portion of the truncal saphenous veins (GSV below-knee and SSV below the midcalf) may carry a risk of saphenous and/or sural nerve injury. It has been reported that limiting RFA treatment to the above-knee GSV markedly decreases the risk of pareshesia by over 50% (Merchant, 2002). Furthermore, the GSV below-knee lies in a more superficial location, making it more susceptible to skin burns if adequate tumescent anesthesia cannot be achieved (Puggioni 2024). As non-thermal ablation options became available (cyanoacrylate, mechanochemical and foam sclerotherapy), when the below-knee and GSV and distal SSV segments are incompetent, treatment can be carried out and is the preferred method to prevent nerve injury (Gloviczki 2023).

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Endovenous ablation is designed to damage the wall of the vein, resulting in fibrosis and subsequent obliteration of the lumen of a segment of the vessel thus eliminating reflux. Laser or radiofrequency ablation is performed by means of a specially designed catheter inserted through a small incision in the distal vein directed under ultrasound guidance to within 2 cm of the saphenofemoral junction. Laser or radiofrequency fibers on the tip of the catheter cause direct heating of the vessel wall, causing the vein to close as the catheter is slowly withdrawn.

As non-thermal ablation options became available (cyanoacrylate, mechanochemical and foam sclerotherapy), when the below-knee and GSV and distal SSV segments are incompetent, treatment can be carried out and is the preferred method to prevent nerve injury (Gloviczki 2023). Cyanoacrylate (VenaSeal™) closure is performed in a similar fashion, with small aliquots of glue placed along the course of the vein under ultrasound guidance, occluding the vein. Mechanochemical ablation is performed with the use of an oscillating catheter to disrupt the intima in conjunction with a sclerosant. Ablation with Varithena™ (polidocanol injectable foam) 1% is performed of a non-compounded sclerosant microfoam into the vein via injection through a sheath or butterfly needle. The benefit of these procedure is that the lack of thermal energy needed reduces the risk of nerve injury substantially.

Treatment of segmental venous reflux within the greater saphenous vein has not been well studied. There is limited evidence that endovenous ablation of segmental reflux, particularly isolated venous reflux in the thigh, versus axial reflux is impactful in relieving symptomatology related to varicose veins. Ablation of the GSV is seldom indicated for isolated SFJ reflux or for isolated segmental reflux when the vein is competent vein proximally and distally, as this is mostly due to an incompetent tributary (Lurie 2020). In addition, the number of saphenous veins to be treated in one episode of care is also not well studied. The appropriate use criteria for treating saphenovenous reflux and varicose veins notes that the average number of saphenous veins treated is 1.3 to 1.9.

Perforating veins extend in a horizontal fashion and are located at numerous locations throughout the lower extremity and directly connect the superficial system to the deep system. Pathologic perforators located directly under the wound bed of a non-healing ulcer can cause delays in wound healing and treatment can expedite closure of the wound and decrease the risk of recurrent ulceration. Intervention is indicated for active venous ulceration in which the perforator is located near the ulcer and demonstrates reflux on duplex imaging. Treatment of pathologic perforators is not medically necessary for any other pathology other than a venous stasis ulcer. Treatment of any saphenovenous reflux should be performed prior to treatment of pathologic perforators. Appropriate treatment options include endovenous ablation and surgical phlebectomy. Either of these are acceptable options for management of pathologic perforators.

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Non-Compounded Foam Sclerotherapy

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General Information

Coding

Procedures	CPT®
Injection of non-compounded foam sclerosant with ultrasound compression maneuvers to guide dispersion of the injectate, inclusive of all imaging guidance and monitoring; single incompetent extremity truncal vein (e.g., great saphenous vein, accessory saphenous vein)	36465
Injection of non-compounded foam sclerosant with ultrasound compression maneuvers to guide dispersion of the injectate, inclusive of all imaging guidance and monitoring; multiple incompetent truncal veins (e.g., great saphenous vein, accessory saphenous vein), same leg	36466

Non compounded foam sclerotherapy - Criteria

Treatment of saphenovenous reflux by non-compounded microfoam is considered medically necessary when symptoms are reported that are attributable to the venous disease and all other criteria with regard to symptoms, imaging requirements and time intervals have been met. **All** of the following criteria must be met:

- Symptoms of venous reflux as documented by a CEAP score of at least 2 or greater OR a VCSS score of 6 or greater.
- Duplex results should demonstrate both of the following:
  - Presence of significant pathologic truncal vein reflux measuring ≥ 500ms by either of the following:
    - in at least 2 segments within any of the following veins to be treated:
      - great saphenous vein above-knee (i.e., saphenofemoral junction,thigh, knee, and calf)
      - small saphenous vein (saphenopopliteal junction, mid-calf)
    - in at least 1 segment within any of the following veins to be treated:
      - anterior saphenous vein in the thigh
      - posterior accessory saphenous vein in the thigh
      - great saphenous vein below-knee

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- Absence of ipsilateral acute lower extremity DVT or chronic multisegmental femoralpopliteal occlusion.

No more than two saphenous veins should be treated within one 12 week period, except for venous ulcers.

Treatment of varicose vein tributaries and the below-knee GSV segment can be performed concurrently in the same procedure as the saphenous vein ablation

Infrapopliteal accessory branches should follow recommendations for tributary veins if not treated during the same episode of care as the above knee accessory branches.

Varithena is not FDA indicated for the treatment of perforator veins.

Note: Use of non-compounded microfoam sclerotherapy (Varithena®) as the method of treating incompetent tributaries or varicose veins is appropriate only when using leftover product during the same session as saphenous vein treatments using the same agent, as it is not considered safer or more effective than physician-compounded foam.

Evidence Discussion

Non compounded microfoam

Sclerotherapy treatment destroys the lining of the affected vein by injecting a solution (either a detergent, osmotic solution, or a chemical irritant) directly into the vessel resulting in obliteration of the vessel. Types of sclerotherapy include liquid sclerotherapy with hypertonic saline, polidocanol, sodium morrhuate or sotradecol or non- compounded foam sclerotherapy (Varithena®). Varithena® is a commercially manufactured microfoam composed of 1% injectable polidocanol solution composed by oxygen-carbon dioxide with low nitrogen concentration in a uniform small bubble size, which can also treat larger diameter veins. The vein is accessed by a cannula or butterfly needle under ultrasound guidance, and the solution is then injected directly under ultrasound guidance. This results in vasospasm and damage to the endothelium, which leads to occlusion of the venous lumen. One or multiple veins can be treated in one session with up to 15 mL of foam per manufacturer's literature, and for treatment of multiple tributaries individual position can be changed as needed to complete all necessary procedures. Scheduling treatment on different days for reasons other than clinical reasons and safety is not considered generally acceptable. Varithena is currently not FDA indicated for treatment of perforators. While Varithena treatment has had satisfactory results, it is important to note that Physician-compounded sclerofoam, prepared using the Tessari method, has not been shown to be less safe or effective than Varithena® in the treatment of varicose veins and tributaries.

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Phlebectomy/High Ligation and stripping

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General Information

- Endovenous ablation is the preferred treatment for saphenovenous reflux. High ligation and stripping can be considered when prior imaging demonstrates a contraindication to endovenous ablation including any of the following:
- Very tortuous saphenous vein
- Aneurysmal saphenous vein (>30mm)
- Presence of intraluminal scarring, webbing precluding placement of catheter

Coding

Open Procedures to remove indicated for treatment of saphenous vein tributaries and unnamed varicose veins	CPT®
Phlebectomy	
Stab phlebectomy of varicose veins, one extremity; 10-20 stab incisions	37765
Stab phlebectomy of varicose veins, one extremity; more than 20 incisions	37766
Ligation, division, and/or excision of varicose vein cluster(s), 1 leg	37785
Unlisted procedure code, arteries and veins, less than 10 incisions	37799
High ligation and/or stripping	
Ligation and division long saphenous vein at saphenofemoral junction, or distal interruptions	37700
Ligation, division, and stripping, short saphenous vein	37718
Ligation, division, and stripping, long (greater) saphenous veins from saphenofemoral junction to knee or below	37722
Ligation and division and complete stripping of long or short saphenous veins with radical excision of ulcer and skin graft and/or interruption of communicating veins of lower leg with excision of deep fascia	37735
Ligation and division of short saphenous vein at saphenopopliteal junction (separate procedure) Phlebectomy	37780

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Open Procedures to remove indicated for treatment of saphenous vein tributaries and unnamed varicose veins	CPT®
Sub-fascial endoscopic perforator surgery (SEPS)	
Unlisted vascular endoscopy procedure	37501
Ligation of perforator veins	
Ligation of perforator veins, subfascial, radical (Linton type), including skin graft, when performed, open, 1 leg	37760
Ligation of perforator vein(s), subfascial, open, including ultrasound guidance, when performed, 1 leg	37761

High Ligation and Stripping/Phlebectomy

High ligation and stripping to treat saphenovenous reflux is medically necessary when **all** of the following apply:

- Symptoms of venous reflux as documented by a CEAP score of at least 2 or greater OR a VCSS score of 6 or greater.
- Results of a venous duplex should demonstrate the following:
  - Presence of significant pathologic truncal vein reflux measuring ≥ 500ms in either:
    - in at least 2 segments within any of the following veins to be treated:
      - great saphenous vein above-knee (i.e., saphenofemoral junction, thigh, knee, and calf)
      - small saphenous vein (saphenopopliteal junction, midcalf)
    - in at least 1 segment within any of the following veins to be treated:
      - anterior saphenous vein
      - posterior accessory saphenous vein
      - great saphenous vein below-knee
    - Absence of ipsilateral acute lower extremity DVT or chronic multisegmental femoralpopliteal occlusion.

Phlebectomy of saphenovenous tributaries is medically necessary when all of the following criteria are met:

- Symptoms of venous reflux as documented by a CEAP score of at least 2 or greater or VCSS score of 6 or greater.
- Results of a recent venous duplex ultrasound or objective measurement by a ruler/tape (completed within 6 months prior to date of scheduled procedure) demonstrate varicosities and tributaries to be **either**:

  - ≥6mm in size
  - ≥3mm in size with ≥500ms of reflux
- There is documentation of one of the following:
  - symptoms have failed to resolve after 12 weeks of observation after prior endovenous ablation therapy (with the exceptions of venous ulcer cases for which the observation period does not apply)
  - tributaries will be treated concurrently as the saphenous vein ablation procedure
  - existing saphenous veins do not exhibit pathologic reflux

Treatment of pathologic perforators is medically necessary when there is documentation of **all** of the following:
- Active venous stasis ulcer
- A recent duplex US performed within past 6 months demonstrates signs of perforator vein incompetence with **both**:
  - Reflux ≥500ms
  - Vein diameter ≥3.5 mm
- Perforator vein is located in the vicinity of an active ulcer
- Superficial refluxing saphenous veins have been previously eliminated or do not exhibit pathologic reflux

Evidence Discussion

According to the 2023 SVS consensus guidelines, phlebectomy or ultrasound-guided foam sclerotherapy may be performed concomitantly with endovenous ablation for patients with symptomatic reflux and associated varicosities. Staged treatment is suggested only when anatomical or medical considerations warrant it. Shared decision-making is emphasized regarding timing. If ablation is performed alone, follow-up beyond three months is recommended to assess the need for additional intervention for persistent or recurrent symptoms. This approach supports individualized care while optimizing outcomes and minimizing unnecessary procedures.

Perforating veins extend in a horizontal fashion and are located at numerous locations throughout the lower extremity and directly connect the superficial system to the deep system. Pathologic perforators located directly under the wound bed of a non-healing ulcer can cause delays in wound healing and treatment can expedite closure of the wound and decrease the risk of recurrent ulceration. Intervention is indicated for active venous ulceration in which the perforator is located near the ulcer and demonstrates reflux on duplex imaging.Treatment of pathologic perforators is not medically necessary for any other pathology other than a venous stasis ulcer.

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Pathologic perforators located directly under the wound bed of a non-healing ulcer can cause delays in wound healing and treatment can expedite closure of the wound and decrease the risk of recurrent ulceration.

Treatment of any axial saphenovenous reflux should be performed prior to treatment of pathologic perforators. Appropriate treatment options include endovenous ablation and surgical phlebectomy. Either of these of these are acceptable options for management of pathologic perforators.

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Sclerotherapy

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General Information

Coding

Procedures indicated for treatment of saphenous vein tributaries and unnamed varicose veins	
Sclerotherapy	
Injection(s) of sclerosant for spider veins (telangiectasia), limb or trunk	36468
Injection of sclerosant; single incompetent vein (other than telangiectasia)	36470
Injection of sclerosant; multiple incompetent veins (other than telangiectasia	36471

Sclerotherapy Criteria

Sclerotherapy treatment of varicose veins, and incompetent tributaries, and perforator vein is medically necessary when reported symptoms are attributable to venous disease and all other criteria with regard to symptoms, imaging requirements and time intervals have been met:

- Symptoms of venous reflux as documented by a CEAP score of at least 2 or greater OR a VCSS score of 6 or greater.
- Results of a venous duplex should demonstrate the following:
  - Presence of significant pathologic truncal vein reflux measuring ≥ 500ms in either:
    - in at least 2 segments within any of the following veins to be treated:
      - great saphenous vein above-knee (i.e., saphenofemoral junction, thigh, knee, and calf)
      - small saphenous vein (saphenopopliteal junction, midcalf)
    - in at least 1 segment within any of the following veins to be treated:
      - anterior saphenous vein
      - posterior accessory saphenous vein
      - great saphenous vein below-knee

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- Absence of ipsilateral acute lower extremity DVT or chronic multisegmental femoralpopliteal occlusion.

Treatment of varicose veins and tributaries can be performed concurrently in the same procedure as the saphenous vein OR if symptoms as listed above have failed to resolve after 12 weeks of observation (conservative therapy is not required.) The observation period does not apply to venous stasis ulcer cases.

Treatment of varicose veins and tributaries

Treatment of varicose veins and tributaries is medically necessary for symptomatic veins that meet the following criteria:

- Symptoms of venous reflux as documented by a CEAP score of at least 2 or greater OR a VCCS score of 6 or greater.
- Results of a recent venous duplex ultrasound or objective measurement by a ruler/ tape (completed within 6 months prior to date of scheduled procedure) demonstrate varicosities and tributaries to be **either**:
  - ≥6mm in size
  - ≥3mm in size with ≥500ms of reflux
- Saphenous veins have been previously eliminated or do not exhibit pathologic reflux

Treatment of the varicose veins in individuals with vein reflux in both the saphenous veins as well as varicose veins or tributary veins is indicated either:

- Concurrently at the same time of the saphenous vein ablation procedure
- When symptoms have failed to resolve after 12 weeks of observation after prior endovenous ablation therapy (conservative therapy is not required). The observation period does not apply to venous ulcer cases

Sclerotherapy of veins <3mm is indicated in the following circumstances:

- Spontaneous bleeding from a varix
- Corona phlebectatica

Treatment of pathologic perforators is medically necessary when there is documentation of **all** of the following:

- Active venous stasis ulcer
- A recent duplex US performed within past 6 months demonstrates signs of perforator vein incompetence with **both**:
  - Reflux ≥500ms
  - Vein diameter ≥3.5 mm
- Perforator vein is located in the vicinity of an active ulcer
- Superficial refluxing saphenous veins have been previously eliminated or do not exhibit pathologic reflux

Evidence Discussion

Sclerotherapy treatment destroys the lining of the affected vein by injecting a solution (either a detergent, osmotic solution, or a chemical irritant) directly into the vessel resulting in obliteration of the vessel. Types of sclerotherapy include liquid sclerotherapy with polidocanol, sodium morrhuate, sotradecol or non-compounded polidocanol foam sclerotherapy (Varithena®).Injection results in vasospasm and damage to the endothelium, which leads to occlusion of the venous lumen. One or multiple veins can be treated in one or multiple sessions.

According to the 2023 SVS consensus guidelines, phlebectomy or ultrasound-guided foam sclerotherapy may be performed concomitantly with endovenous ablation for patients with symptomatic reflux and associated varicosities. Staged treatment is suggested only when anatomical or medical considerations warrant it. Shared decision-making is emphasized regarding timing. If ablation is performed alone, follow-up beyond three months is recommended to assess the need for additional intervention for persistent or recurrent symptoms. This approach supports individualized care while optimizing outcomes and minimizing unnecessary procedures.

Perforating veins extend medially to laterally in a horizontal fashion and are located at numerous locations throughout the lower extremity and directly connect the superficial system to the deep system. Perforating veins usually penetrate the musculature to connect the superficial and deep venous systems. Pathologic perforators located directly under the wound bed of a non-healing ulcer can cause delays in wound healing and treatment can expedite closure of the wound. Treatment of pathologic perforators is not medically necessary for any other pathology other than active venous stasis ulcer. Pathologic perforators located directly under the wound bed of a non-healing ulcer can cause delays in wound healing and treatment can expedite closure of the wound and decrease the risk of recurrent ulceration. Intervention is indicated for active venous ulceration in which the perforator is located near the ulcer and demonstrates reflux on duplex imaging. Treatment of any concomitant saphenovenous reflux should be performed prior to treatment of pathologic perforators. Appropriate treatment options for incompetent perforators include endovenous ablation, surgical phlebectomy, ultrasound-guided sclerotherapy and sub-fascial endoscopic perforator surgery (SEPS). Each of these are acceptable options for management of pathologic perforators.

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Venous Angioplasty and Stent

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v1.0.2026

General Information

Conditions treated

- Iliac vein stenosis/occlusion secondary to prior DVT, stricture, or extrinsic compression with non-thrombotic iliac vein lesions (NIVL)
- Thoracic Outlet Syndrome (TOS)
- Pulmonary vein stenosis
- Catheter or cardiac device related Venous outflow obstruction
- Superior Vena Cava Syndrome
- Left Renal Vein Compression (Nutcracker Syndrome)
- Hepatic vein thrombosis (Budd-Chiari Syndrome)
- Post transplant venous anastomotic stenosis

Coding

Procedures performed for iliac vein stenosis/occlusion/compression

Procedure description	CPT®
Iliac vein angioplasty/stenting	
Transcatheter placement of an intravascular stent(s), open or percutaneous, including radiological supervision and interpretation and including angioplasty within the same vessel, when performed; initial vein	37238
Transcatheter placement of an intravascular stent(s), open or percutaneous, including radiological supervision and interpretation and including angioplasty within the same vessel, when performed; each additional vein (List separately in addition to code for primary procedure)	37239
Transluminal balloon angioplasty (except dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same vein; initial vein	37248

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Procedure description	CPT®
Transluminal balloon angioplasty (except dialysis circuit), open or percutaneous, including all imaging and radiological supervision and interpretation necessary to perform the angioplasty within the same vein; each additional vein (List separately in addition to code for primary procedure)	37249
IVUS	
Intravascular ultrasound (noncoronary vessel) during diagnostic evaluation and/or therapeutic intervention, including radiological supervision and interpretation; initial noncoronary vessel (List separately in addition to code for primary procedure)	37252
Intravascular ultrasound (noncoronary vessel) during diagnostic evaluation and/or therapeutic intervention, including radiological supervision and interpretation; each additional noncoronary vessel (List separately in addition to code for primary procedure)	37253

Iliac Vein and Inferior Vena Cava (IVC) Angioplasty/stenting (including non-thrombotic iliac vein lesions (NIVL))

Indications

- Iliac vein angioplasty/stenting is medically necessary when there is documentation of **one** of the following conditions:
  - Acute lower extremity iliofemoral DVT following thrombolysis or mechanical thrombectomy when there is documentation of an underlying iliac vein or inferior vena cava (IVC) compression demonstrating ≥50% residual stenosis
  - Non-thrombotic iliac vein or IVC lesions with ≥50% area reduction or >60% diameter stenosis (on US, MRV, CT Venogram, or IVUS) when there is documentation of either of the following conditions:
    - Venous stasis ulceration
    - Advanced stasis dermatitis
  - Venous claudication or lifestyle-limiting asymmetric lower extremity edema or advanced stasis dermatitis or when there is documentation of **all** of the following:
    - No identifiable underlying non-vascular cause
    - At least ≥50% area reduction or >60% diameter stenosis with presence of venous collaterals as documented by ultrasound, or MRV/CTV, or venography and/or IVUS
    - Failed 8 weeks trial of conservative therapy including graded compression stockings, weight loss (if applicable) as evidenced by (any) of the following:

- No improvement
- Worsening of symptoms
- Limited improvement with continued lifestyle-limiting symptoms

◦ Pelvic Congestion syndrome when **both** of the following:

▪ Labial/vaginal varicosities associated with pain, swelling, bleeding and there is documentation of one of the following:
- At least ≥50% area reduction by IVUS
- >60% diameter stenosis with presence of venous collaterals as documented by ultrasound,

  MRV/CTV, or venography and/or IVUS

▪ Chronic pelvic pain of more than six months duration accompanied by **any** of the following criteria:
- Pain exacerbated by walking, standing, and fatigue
- Post coital ache
- Dysmenorrhea
- Dyspareunia
- Bladder irritability and rectal discomfort
- Recurrent lower extremity varicosities
- No evidence of inflammatory disease
- Pelvic congestion syndrome is supported by **either** of the following imaging results:
  • Ultrasound demonstrates **one** of the following:
    ◦ Tortuous pelvic veins diameter of >6mm
    ◦ Slow blood flow <3 cm/sec or reversed caudal flow
    ◦ Dilated arcuate veins in the myometrium communicating between bilateral pelvic varicose veins
    ◦ Polycystic changes in the ovaries
  • CT or MR of the pelvis demonstrates **one** of the following:
    ◦ Four ipsilateral tortuous para-uterine veins with a diameter of >4mm
    ◦ An ovarian vein diameter of >8mm

Note:

Iliac venous stenting can be performed at the same time or a staged procedure with ovarian vein embolization in presence of ovarian vein reflux when criteria for intervention are met

Upper extremity venous angioplasty/stenting for venous occlusive disease

Thoracic Outlet Syndrome (TOS)

Axillary vein or subclavian vein angioplasty/stenting is medically necessary following thrombolysis and decompression for treatment of associated musculoskeletal abnormality (e.g., first rib resection, cervical rib resection and/or scalenectomy) when there is documentation of **any** of the following conditions:

- Acute axillary and/or subclavian vein DVT with axillary or subclavian vein compression resulting in significant residual stenosis (>30%)
- Non-thrombotic axillary vein or subclavian vein stenosis ≥50% with presence of venous collaterals

Hemodialysis Outflow Obstruction

CPT® 37238 and 37248

Venous angioplasty of upper extremity outflow veins from a puncture site outside of the dialysis circuit is indicated when there is documentation of ANY of the following conditions:

- Presence of Ipsilateral arm edema and/or venous claudication
- Inadequate hemodialysis performance including:
  - Recirculation
  - Aspiration of clot during dialysis
  - Inability to achieve target dialysis blood flow
- Prolonged bleeding after hemodialysis
- Development of large superficial collateral channels
- Loss of thrill in fistula/graft or development of pulsatile fistula/graft

Venous Stenting of upper extremity outflow veins and central veins is indicated when there is documentation of one of the following:

- Symptomatic, Recurrent >50% stenosis within 3 months of angioplasty
- Elastic recoil resulting in residual stenosis >50%
- Coverage of pseudoaneurysm or areas of dissection from prior intervention

Note: These indications apply to procedures performed via punctures outside of the dialysis circuit. (i.e. femoral or brachial artery)

Catheter or cardiac device related venous outflow obstruction

Venous angioplasty of upper extremity outflow veins is medically necessary when both of these criteria are met:

- >50% stenosis of the outflow vein or >50% ipsilateral central venous stenosis
- Presence of ipsilateral arm edema and/or venous claudication

Note:

Venous stenting should be avoided in cases with an indwelling device present in vein

Superior Vena Cava Syndrome

Venous angioplasty and stenting is medically necessary when diagnostic testing indicates >50% stenosis in the superior vena cava in the setting of **any** of the conditions listed below:

- Palliative care when SVC syndrome is secondary to advanced malignancy
- Non-malignant SVC syndrome when **both** of the following are met:
  - Presence of **any** of the following lifestyle-limiting signs or symptoms:
    - Orthopnea
    - Swelling of head and neck
    - Dizziness
    - Blurring of vision
  - Failure of symptoms to resolve with conservative therapy including **any** of the following:
    - Elevation of head of bed
    - Diuretic therapy
    - Anticoagulation therapy

Left Renal Vein Compression (Nutcracker Syndrome)

Indications

Angioplasty and/or stenting is medically necessary for **re-intervention** when there is documentation of both of these criteria after surgical treatment:

- recurrent left renal vein compression documented by imaging
- symptoms of left renal vein compression (e.g., flank pain, hematuria, proteinuria)

Non-indications

Angioplasty or stenting of the left renal vein for primary treatment of nutcracker syndrome is **not** medically necessary.

Initial treatment of left renal vein compression prior to surgical decompression is considered **not** medically necessary.

Pulmonary vein stenosis

Treatment of obstruction of major pulmonary veins is medically necessary when ≥60% narrowing of the pulmonary vein or an absolute stenosis diameter of 4-6mm on advanced imaging (CTA, MRA, Angiography) is identified.

Treatment of obstruction of major pulmonary veins is medically necessary when >50% stenosis is identified on venogram or IVUS≥60% narrowing of the pulmonary vein or an

absolute stenosis diameter of 4-6mm on advanced imaging (CTA, MRA, Angiography) is identified.

Hepatic vein thrombosis

Thrombotic obstruction of major hepatic veins or Vena Cava (Budd-Chiari Syndrome) is medically necessary when there is a >50% stenosis identified on venogram or IVUS.

Post-Transplant arterial or venous intervention is medically necessary for individuals with a history of renal transplant, hepatic transplant, pancreatic transplant, heart transplant, lung transplant or small bowel transplant with one of the following:

- Arterial stenosis of ≥ 50% involving the anastamosis, transplant artery or donor artery for the transplanted organ on duplex, CT, MRI or angiography.
- Venous stenosis of ≥ 30% involving the anastamosis, Portal Vein or outflow vein for the transplanted organ on duplex, CT, MRI or angiography.

Evidence Discussion

Treatment of Iliocaval vein stenosis, occlusion and compression (Including May-Thurner Syndrome)

Deep vein occlusive disease may occur secondary to external compressive syndromes, DVT with residual thrombus or scarring or secondary to radiation therapy from malignancy. May-Thurner syndrome is secondary to compression and subsequent endofibrosis of the left iliac vein secondary to an overlying right iliac artery. Eventually, this can lead to thrombosis of the iliac vein and extensive DVT of the left lower extremity. Following treatment of the acute DVT via mechanical thrombectomy or thrombolysis, treatment of a residual stenosis of more than 50% via angioplasty and/or stenting is medically necessary to decrease the risk of re-thrombosis, thromboembolic events and post-phlebitic syndrome.

For individuals with chronic limb edema, chronic venous stasis skin changes and imaging findings of chronic iliofemoral venous occlusion or stenosis of >50% diameter in the iliac vein or IVC, venous angioplasty and/or stenting is medically necessary to improve venous outflow, and decrease the risk of leg edema, and venous ulceration.

Venous claudication may occur due to impaired outflow due to deep vein stenosis or occlusion. Evaluation is initially directed at identifying non-vascular causes of leg pain and a trial of compression therapy should be undertaken. If imaging identifies a stenosis of more than 50% on the iliac vein or IVC and symptoms persist or worsen despite compression therapy, angioplasty and or/stenting may be indicated

Individuals with incompletely lysed or residual DVT can develop post-thrombotic syndrome that can be characterized as chronic edema, venous stasis changes, pain

and, in advanced cases venous stasis ulceration. Incompletely lysed DVT can cause luminal narrowing of the vein restricting venous outflow leading to stenosis or occlusion and /or can lead to valve dysfunction resulting in reflux of venous blood retrograde towards gravity. Both pathologies ultimately lead to chronic edema which can cause chronic pain and venous stasis disease. The mainstay of treatment for chronic deep venous thrombosis is compression stockings. Individuals whose symptoms are not relieved with conservative therapy may be a candidates for iliac vein angioplasty/ stenting.

Nonthrombotic iliac vein lesions (NIVLs) most typically occur as a result of vein compression between abdominopelvic arterial structures and the spine. This compression results in intrinsic venous stenosis, fibrosis, intraluminal webs or spurs. NIVL can lead to chronic edema, varicose veins and venous stasis ulceration. Treatment is with iliac vein angioplasty/stenting for both acute and chronic DVT. Prophylactic treatment of NIVL in the absence of acute or chronic DVT OR chronic left lower extremity edema and its sequelae such as varicose veins or venous stasis ulcers is NOT considered medically necessary.

Venous thoracic outlet syndrome

Venous thoracic outlet syndrome occurs due to compression of the axillo-subclavian vein secondary to musculoskeletal compression at the thoracic outlet. This may be due to congenital factors such as cervical ribs, secondary to prior trauma or due to hypertrophy of the scalene muscles from repetitive use or weightlifting activities. This may lead to acute thrombosis or chronic pain and edema with use of the extremity. Management consists of treatment for the acute DVT if present followed by surgical correction of the musculoskeletal issue by rib resection and/or scalenectomy. There is often intraluminal scarring within the vein that is treated by balloon angioplasty. Stenting is rarely medically necessary except for persistent stenosis that is resistant to balloon angioplasty.

Catheter or cardiac device related stenosis may occur secondary to inflammation within the vein due to the indwelling foreign body. Significant stenosis resulting in arm edema, pain and DVT may occur. Balloon angioplasty may be performed to treat a significant stenosis. Stenting should be avoided as the stent may impede removal or exchange of the catheter or device at a later date.

Superior vena cava syndrome

Superior vena cava syndrome may occur secondary to compression by an intrathoracic malignancy or secondary to benign causes of compression or stenosis. The subsequent venous hypertension may result in intracranial symptoms and orthopnea with edema of the head, face and upper extremities. Balloon angioplasty is the initial treatment with stenting often being required for palliation in cases of malignancy or recurrent stenosis.

Left renal vein compression (Nutcracker Syndrome)

Left renal vein compression occurs secondary to an anatomically compression of the left renal vein between the superior mesenteric artery and the aorta. This may lead to venous congestion within the left kidney due to the impaired outflow. Symptoms and signs include flank pain, hematuria and proteinuria.

Imaging including duplex ultrasound, CTV/MRV or invasive venography demonstrates a dilated renal vein proximal to the aorta and significant stenosis of the vein as it crossed the aorta. Large left sided retroperitoneal venous collaterals are usually present.

Due to the external compression, significant size differential of the vein and risk of stent migration initial endovascular management is not recommended. Surgical management with Left renal vein translocation or bypass is the preferred initial management for symptomatic left renal vein compression.

Venous angioplasty and/or stenting may be indicated for recurrent stenosis after surgical decompression.

Pulmonary vein stenosis

Pulmonary vein stenosis may occur as a congenital defect in children or following catheter based interventions such as radiofrequency ablation for cardiac arrhythmia in children or adults. Balloon angioplasty is the initial treatment and often will need to be repeated due to high rates of recurrent stenosis.

Hepatic vein thrombosis (Budd-Chiari Syndrome)

Hepatic vein thrombosis may occur secondary to malignancies, acquired prothrombotic disorders, infection or inherited thrombophilias. The resulting outflow obstruction from the liver may result in severe portal hypertension or liver failure. Balloon angioplasty is associated with good outcomes and low morbidity in cases with hepatic vein stenosis.

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Intravascular Ultrasound (IVUS)

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Intravascular Ultrasound (IVUS)

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IVUS Coding

IVUS Coding	CPT®
Intravascular ultrasound (noncoronary vessel) during diagnostic evaluation and/or therapeutic intervention, including radiological supervision and interpretation; initial noncoronary vessel (List separately in addition to code for primary procedure)	37252
Intravascular ultrasound (noncoronary vessel) during diagnostic evaluation and/or therapeutic intervention, including radiological supervision and interpretation; each additional noncoronary vessel (List separately in addition to code for primary procedure)	37253

IVUS - General Indications

The use of intravascular ultrasound is considered medically appropriate for the evaluation and treatment of:

- Iliac vein or inferior vena cava obstruction
- Upper extremity venous obstruction
- Superior vena cava syndrome
- Nutcracker syndrome

IVUS is medically necessary **both** during a diagnostic procedure **and again** at the time of intervention for **any** of the following reasons:

- To diagnose or perform sizing measurements for urgent or elective thoracic aortic disease intervention when an approved indication is suspected
- To diagnose or perform sizing measurements for urgent or elective abdominal aortic disease intervention when an approved indication is suspected
- Evaluation and treatment of iliac vein, abdominal or central vena cava obstruction
- To evaluate lower extremity PAD or peripheral aneurysm indication

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IVUS Indications

Critical limb ischemia

- IVUS is considered medically necessary to evaluate critical limb ischemia for **any** of the following indications:
  - To assess lesions for hemodynamic significance and plaque morphology
  - To insure luminal crossing prior to intervention
  - To determine vessel sizing for intervention
  - To assess for post intervention complications such as arterial dissection or thrombosis

Claudication

IVUS is medically necessary for evaluation of claudication in the setting of **any** of the following conditions:

- Aortic bifurcation and Iliac arteries (including Common Iliac artery, External Iliac artery and Internal Iliac artery)
  - To minimize contrast in individuals at increased risk for contrast related nephropathy
  - Confirm luminal placement of wire after crossing an occluded vessel segment
  - If there is concern for post intervention arterial dissection
- In the absence of pre-procedural imaging (such as MRA, CTA, or duplex ultrasound):
  - To minimize contrast in individuals with increased risk for contrast related nephropathy
  - For vessel sizing of femoral- popliteal arteries prior to use of drug-coated balloon or primary stenting
  - To determine appropriate therapeutic modality for treatment of the femoral-popliteal arteries based on plaque morphology and burden
- Femoral-Popliteal Arteries
  - To minimize contrast in individuals at increased risk for contrast related nephropathy
  - Ambiguous lesion or stenosis
  - Filling defect on angiography
  - Confirm luminal placement of wire after crossing an occluded vessel segment
  - If there is concern for post-intervention arterial dissection

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IVUS Non-indications

- Infrapopliteal/ tibial Arteries
  - There is limited support for utilization of IVUS for infrapopliteal intervention in claudication.

Background and Supporting Information

Intravascular Ultrasound (IVUS) is an intravascular imaging modality that is used to characterize disease, perform sizing and guide treatment. It is performed with a specialized catheter which obtains images using a transducer from within the blood vessel.

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Embolization

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Vascular Embolization Indications

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Vascular Embolization Coding

Procedure description	CPT®
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; venous, other than hemorrhage (e.g., congenital or acquired venous malformations, venous and capillary hemangiomas, varices, varicoceles)	37241
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; arterial, other than hemorrhage or tumor (e.g., congenital or acquired arterial malformations, arteriovenous malformations, arteriovenous fistulas, aneurysms, pseudoaneurysms)	37242
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; for tumors, organ ischemia, or infarction	37243
Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; for arterial or venous hemorrhage or lymphatic extravasation	37244

Arteriovenous Malformations

Vascular embolization/occlusion of cutaneous and/or deep tissue hemangioma or other vascular malformation (e.g., venous, arteriovenous, lymphatic) is considered medically necessary for **any** of these indications:

- Prior to planned scheduled surgery or SRS (Stereotactic radiosurgery)
- The lesion is affecting a vital structure (e.g., nose, eyes, ears, lips, or larynx)
- The lesion results in **any** of the following:
  - Bleeding
  - High output heart failure

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- Pain
- Repeated infection
- Interferes with activities of daily living

Uterine Artery Embolization

Uterine artery embolization is considered medically necessary to treat **any** of the following conditions:

- Abnormal placental implantation (e.g., placenta accreta or increta) leading to bleeding
- Postpartum hemorrhage, after failure of pharmacologic uterotonic measures, surgical treatments, or uterine massage
- Uterine bleeding secondary to uterine arteriovenous malformation
- Uterine leiomyomas documented on prior imaging (US, MRI) with **any** of the following signs or symptoms:
  - Abnormal uterine bleeding such as atypical bleeding pattern or volume, anemia or hemorrhage with a normal recent endometrial sampling biopsy
  - Dysmenorrhea unresponsive to analgesics causing impairment in ability to carry out daily activities
  - Dyspareunia greater than 6 months not attributable to other pathology
  - Urinary symptoms secondary to mass effect from fibroid disease

Aneurysms

Visceral Artery Aneurysm or Pseudoaneurysm (PSA)

- Coil embolization is medically necessary to treat visceral artery aneurysm or pseudoaneurysm (PSA) when diagnostic imaging (CTA, MRA, US, angiogram) documents **any** of the following:
  - hepatic artery aneurysm ≥2.0cm
  - celiac artery aneurysm ≥2.0cm and any size celiac artery PSA
  - colic artery aneurysm any size
  - gastric and gastroepiploic artery aneurysm of any size
  - jejunal and ileal artery aneurysm ≥2.0cm
  - superior mesenteric artery (SMA) aneurysm of any size
  - pancreaticoduodenal and gastroduodenal artery aneurysm of any size
  - splenic artery aneurysm ≥3.0cm and any size splenic artery PSA
  - renal artery aneurysm ≥3.0cm

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Type 2 endoleak (due to side branch vessels)

- Post EVAR repair of a Type 2 endoleak by embolization of aortic side branches or aortic sac is medically necessary when there is documentation of Sac enlargement >5mm from prior imaging

Embolization as an adjunct to EVAR

- Internal iliac (hypogastric) artery embolization prior to EVAR is considered medically necessary when a common iliac artery aneurysm requiring stenting to the level of the external iliac artery is identified pre-operatively.
- Embolization of aortic side branches is medically necessary in individuals with a Type 2 endoleak with sac enlargement.

Non-indications

- Embolization of aortic side branches prior to EVAR for the purpose of preventing Type 2 endoleak is **not** medically necessary. This includes but is not limited to the embolization of lumbar arteries and internal mesenteric arteries.

Embolization for Musculoskeletal Indications

Genicular artery embolization, shoulder joint embolization, and plantar artery embolization for plantar fasciitis

Genicular artery embolization is considered medically necessary in an individual with **any** of the following conditions:

- History of total knee arthroplasty with **any** of the following:
  - Hemarthrosis
  - Chronic pain and failed pain management with oral medications and VAS pain score ≥55 or WOMAC score ≥40
- Osteoarthritis in the setting of **all** the following:
  - Referred by Musculoskeletal specialist (orthopedic surgeon or sports medicine physician or PM R)
  - Kellgren and Lawrence (KL) Grade 1-3
  - VAS pain score ≥55 or WOMAC score ≥ 40
  - Failure of ≥ 3 months of conservative therapy which may include any of the following:
    - topical or oral anti-inflammatory medications
    - joint injection of steroid, PRP, or viscous agent
    - physical therapy/ home exercise program

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- Not a candidate for total knee arthroplasty due to age, obesity or other comorbid illnesses as determined by a Musculoskeletal specialist (orthopedic surgeon or sports medicine physician, or PM&R) and **both**
  - KL Grade 4
  - VAS pain score ≥55 or WOMAC score ≥40

Shoulder Joint embolization

Embolization for shoulder joint pathology is considered medically necessary for **either** of the following conditions:
- Individuals with hemarthrosis
- Individuals with adhesive capsulitis (frozen shoulder) when **all** of the following apply:
  - Physical exam consistent with adhesive capsulitis
  - Plain X-ray excludes other diagnosis
  - Failure of ≥3 months of conservative therapy including **any** of the following:
    - topical or oral anti-inflammatory medications
    - steroid injection
    - physical therapy/ home exercise program

Hemorrhoids

Endovascular embolization for hemorrhoids is considered medically necessary for individuals who have failed non-surgical treatment including dietary and lifestyle changes and any of the following:
- Grade 1-3 hemorrhoids with recurrent hemorrhoidal bleeding episodes confirmed on anoscopy or no other source of bleeding identified
- Grade 1-3 hemorrhoids with symptoms other than bleeding who are not candidates for in-office procedures or surgery due to co-morbid illnesses such as requirement for anticoagulation, coagulopathy, immunosuppression or inflammatory bowel disease.
- Grade 1-3 hemorrhoids with symptoms other than bleeding and failed prior interventions such as sclerotherapy or band ligation

Repeat embolization for hemorrhoidal disease is considered medically necessary for individuals with recurrent daily rectal bleeding secondary to recurrent or persistent hemorrhoids

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Urologic Conditions

Prostatic Artery Embolization (PAE) for Benign prostatic hyperplasia (BPH)

Prostate artery embolization is considered medically necessary in individuals with BPH and lower urinary tract symptoms (LUTS) who have failed or could not tolerate medical therapy such as Alpha-1 blockers or 5-alpha-reductase inhibitors and have documentation of any of the following:

- Hematuria of prostatic origin
- Acute or chronic urinary retention with preserved bladder function to achieve catheter independence
- Severe LUTS as described in clinical note or by AUA score (≥20) and prostate size (≥ 50 cm3)
- Bladder outlet obstruction caused by Intravesicular Prostate Protrusion (IPP)
- Individuals deemed not surgical candidates for any of the following reasons:
  - Advanced age
  - Multiple comorbidities
  - Coagulopathy or inability to stop anticoagulation or antiplatelet therapy

Repeat Prostate artery embolization may be indicated for patients who had significant initial response but recurrence of symptoms after 6 months.

Indications for Varicocele Embolization

Venous embolization of a varicocele documented on physical exam or ultrasound imaging is considered medically necessary for **either** of the following clinical scenarios:

- Management of infertility with palpable varicocele
- Recurrent varicocele

Oncologic Indications

Vascular embolization is medically necessary for treatment of **any** of the following conditions:

- In the setting of malignancy for chemoembolization or cessation of bleeding
- Hepatocellular carcinoma
- Hepatic metastases from colorectal and neuroendocrine tumors
- Renal cell carcinoma
- Localized resectable giant cell tumor of the bone and/or unresectable axial lesions
- Metastatic follicular, Hurthle cell, or papillary thyroid carcinoma when these tumors are not amenable to radioactive iodine therapy

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- Medullary thyroid cancer with symptomatic distant metastases
- Highly vascular tumors for treatment purposes

Ovarian Vein Embolization

Ovarian Vein Embolization is medically necessary for the treatment of pelvic congestion syndrome when **all** of the following apply:

- Chronic pelvic pain of more than six months duration accompanied by any of the following criteria:
  - Pain exacerbated by walking, standing, and fatigue
  - Post coital ache
  - Dysmenorrhea
  - Dyspareunia
  - Bladder irritability and rectal discomfort
  - Recurrent lower extremity varicosities
- No evidence of inflammatory disease
- Pelvic congestion syndrome is supported by **either** of the following imaging results:
  - Ultrasound demonstrates **one** of the following:
    - Tortuous pelvic veins diameter of >6mm
    - Slow blood flow <3 cm/sec or reversed caudal flow
    - Dilated arcuate veins in the myometrium communicating between bilateral pelvic varicose veins
    - Polycystic changes in the ovaries
  - CT or MR of the pelvis demonstrates **one** of the following:
    - Four ipsilateral tortuous para-uterine veins with a diameter of >4mm
    - An ovarian vein diameter of >8mm

Non-indications

Due to the lack of evidence supporting the clinical benefit over other treatments, indications for vascular embolization not listed in this guideline are considered to be not medically necessary.

Evidence Discussion

Embolization for Hemorrhoid Disease

Catheter directed hemorrhoidal embolization for rectal bleeding due to hemorrhoids has shown promise as a safe and minimally invasive technique in several small studies.

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Clinical success rates have ranged between 63 and 97% in small studies.1 Large studies have not been completed and long-term follow-up beyond a year is limited. A 2023 study by DeGregario et al reviewed a Spanish emborrhoid registry of 80 patients treated with embolization for Grade 1-3 hemorrhoids.2 Technical success was 100% but 31% of patients had recurrence of rectal bleeding at 1 year and 21% required repeat embolization with 5% having open hemorrhoidectomy. In 2021, Talaie et all reviewed the available studies and concluded that " Hemorrhoid embolization can preserve the anal tone and maintain the hemorrhoidal tissue in place requiring minimal local wound care on an outpatient basis. However, due to the paucity of high-quality trials, further research is warranted to evaluate its long-term outcomes, compare its efficacy with other treatment modalities, and fully assess its role in the treatment of hemorrhoid." The Italian Society of colorectal surgery (SICCR) consensus statement in 2020 noted weak evidence (2C) for embolization in the management of hemorrhoids except in controlling bleeding in patients with contraindications for conventional surgery such as coagulopathy, immunosuppression or inflammatory bowel disease(1C).4 In May 2024, the American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the management of Hemorrhoids, did not include embolization as part of the recommended management options.5 Guideline recommendation: Based on the available data, hemorrhoidal embolization may be medical necessary for some patients.

Genicular Artery Embolization

Osteoarthritis of the knee is a common and progressive disease. Management includes anti-inflammatory and pain medication, injections with steroids, pain medication and hyaluronan lubricant and surgical knee replacement. Over the past ten years, the evaluation of genicular artery embolization (GAE) for the management of knee pain secondary to synovial inflammation as part of the cascade of osteoarthritis has been explored. Initially, genicular artery embolization was used for treatment of hemarthrosis associated with prior knee surgery or spontaneous hemarthrosis.1 More recent studies have shown significant promise for the treatment of knee pain that is resistant to medical therapy and injections.4-8 Patients experience a significant improvement in pain scores following GAE with minimal risk of complication. The patients will less severe osteoarthritis as judged by KL scores 1-3, seem to have more durable pain relief compared to those with KL 4 disease.7,8 The benefits of GAE include increased mobility and decreased need for lifelong anti-inflammatories or pain medications. Bagla et al demonstrated significant improvement compared to sham procedures.6 Recent trials including the MOTION trial and GENESIS 2, are comparing GAE to standard therapy. These studies are currently enrolling. Based on the current data, GAE appears to safe, effective in reducing pain scores and medication use in patients with mild-moderate osteoarthritis with durability out to 2 years. For those with more advanced osteoarthritis, the relief from pain is not as durable but may still play a role in decreasing pain to delay the

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need for TKA, improve ability to walk and adjust risk factors prior to TKA. Multiple meta-analysis have shown significant initial and sustained improvement in pain scores and patient satisfaction following GAE out to 2 years.

Shoulder Joint Embolization

Adhesive capsulitis or "frozen shoulder" is an inflammatory condition that leads to significant shoulder pain and limited mobility. Its cause is unknown but generally progresses in three clinical phases. The first phase "freezing phase" is characterized by worsening shoulder pain with decreasing range of motion (ROM) and typically lasts 3-9 months. The second, "frozen phase" is characterized by decreased active and passive ROM due to mechanical restriction and may last 4-12 months. Pain may improve with the decreased ROM in phase 2. The final phase, known as the "thawing" phase is characterized by gradual return of ROM in some patients and typically lasts 12-42 months. Synovitis is the main finding in the first two phases is synovitis with development of adhesions as it progresses. Increased soft tissue and vascularity is noted on US during these phases.4 This was also confirmed with FDG PET imaging showing significant inflammation.5 Multiple studies have been published regarding non-surgical management including physiotherapy, steroid injection, and hydrotherapy. In the early phases, steroid injection and home exercise therapy has the most consistent improvement for pain relief and improving ROM. Surgical therapies, including arthroscopic capsular release (ACR) and Manipulation under Anesthesia (MUA) are considered a treatment of last resort for patients who do not respond to conservative therapy and have mixed results with significant risks including fractures, axillary nerve injury, rotator cuff and labral tears. 2-4 Additionally, the FROST trial2, failed to show statistical difference in improvement in the Oxford Shoulder Score between physical therapy, MUA and ACR. More recently, embolization of the synovium has become an option for treatment of adhesive capsulitis given the underlying inflammatory response in the initial stages. Shintaku et alused FDG PET to assess patient before and after transarterial embolization.5 They confirmed significant inflammation prior to intervention and improvement after embolization with decreased pain and decreased FDG uptake.

Prostatic Artery Embolization

Initially, PAE was used in patients with hematuria secondary to prostatic origin with significant success. Over the past 20 years, several trials have been performed to look at prostatic artery embolization for BPH/LUTS. The majority of the studies compared PAE to TURP with some initial trials comparing PAE to SHAM for efficacy. All trials showed improvement in symptoms compared to baseline as confirmed in the SHAM trials. When comparing PAE to TURP, several randomized, controlled studies showed the outcomes are similar for symptom relief of symptoms with better volume reduction and long-term outcomes with TURP. However, TURP is also associated with higher rates of incontinence and sexual dysfunction including erectile dysfunction and

ejaculatory issues. In 2024 the AUA released an amendment to their guidelines stating that PAE may be offered as be offered for the treatment of LUTS/BPH. They noted that continued evaluation of PAE in trials is need but there is evidence for its use in select patients.

Recurrent prostate enlargement and LUTs sumptoms may occur and can be divided into early recurrence (12-18 months) or late recurrence. Early recurrence is usually secondary to collateral flow or recanulization of embolized vessels. Costa et al published a series on 108 patients who had undergone repeat prostate artery embolization for BPH and LUTS symptoms. This can be secondary to initial unilateral embolization only, or due to collateral flow or recanulization of embolized vessels. They assessed patients who had no significant response to initial embolization (group 1) compared to those that had initial clinical improvement in the first 6 months then recurrence of their symptoms (group 2). They found little impact of repeat embolization in group 1. There was a significant clinical response in group 2, with an 84% cumulative probability of clinical success in this group.1 Most of the time this is due to collateral flow or recanulization of embolized vessels. Lehrer et al found similar results and concluded that only 18% of patients who had persistent symptoms after inital embolization benefited from repeat embolization.3 Repeat embolization was found to be safe and effective with low risk of complication. Late recurrence can be due to prostate gland regrowth over time.2 These patients may also benefit from repeat intervention.

Varicocele development may occur in all age groups and may lead to pain, testicular swelling and may have an impact on fertility. Management of varicoceles for male infertility remains somewhat controversial based on a recent global survey by Shah et al in 2022. The majority are still being managed by surgical technique with only 2.6% of respondents citing embolization or sclerotherapy as their preferred repair technique. The risk of hydrocele and spermatic artery injury are associated with surgical repair and eliminated with embolization procedures. A review of the available guidelines included a meta-analysis of varicocele and fertility studies in 2016 and a more recent study by Sheehan et al, both showed a positive impact in sperm concentration, motility and morphology after varicocele embolization. These findings would support an improvement in male fertility following embolization. This is also supported in the AUA/ASRM guideline on infertility in Men published in 2021. Venous embolization of varicoceles has been shown to be effective in decreasing pain with durability of symptom relief over 4 years. The American Vein and Lymphatic Society working group on pelvic venous disorders include varicocele in their definition of pelvic venous disorders (PeVD) as result of extra pelvic varices that may result from pelvic origins (V_3a) along with vulvar varices in 2021. Pelvic vein embolization is supported for the management of V_3a varices.

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Peripheral Vascular Intervention

Supplemental Information

Guideline Page

Billing Group Resource..... 119

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Billing Group Resource

The exact procedure codes needed may not be known until the time of the procedure. To simplify this process, peripheral vascular intervention requests are created based on billing groups. A billing group is a selection of related procedure codes that can be used interchangeably under a single authorization number to avoid additional efforts to update requests once the procedure has been performed. Some other benefits of this process include:

- Faster case creation for providers
- Flexibility for case billing based on actual procedure performed
- Ability in some cases to allow multiple procedure codes to be submitted from the same billing group

Request a Procedure Using Billing Groups

To select a billing group, choose any of the included procedure codes. The review process will automatically consider the related codes.

An approval or denial will apply to all of the codes within the same billing group. Individual procedure codes do not need to be entered manually.

Multiple billing groups may be selected for the same case based on what the provider anticipates will be needed.

Each billing group has a maximum number of units that may be submitted for reimbursement to the health plan. This maximum unit value may be different for each billing group. The total number of procedure codes submitted for final billing from each group should not exceed this value. A provider is allowed to submit fewer codes from a billing group than the maximum value if appropriate. The determination letter will state the maximum number of units allowed per billing group.

Which Codes Are In Each Billing Group?

Evicore Web Resource: **http://www.evicore.com/resources**

- Select the desired health plan
- Click Solution Resources
- Click Cardiac & Vascular Intervention

Click the Vascular Intervention Code List link for full billing group descriptions

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