CLINICAL GUIDELINES

Peripheral Vascular Intervention

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VERSION 3.0.2024

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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Glossary of Terms and Abbreviations

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 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.
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 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	Fabric material used to replace a segment of an artery or bypass an occluded segment of artery.
High-grade stenosis	A high grade stenosis is defined as a stenosis limiting flow by at least 50% or greater.

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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.
NASCET	North American Symptomatic Carotid Endarterectomy Trial
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.
Stent-graft	A metal scaffold covered by fabric material placed inside an artery.
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. Patients 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.

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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.

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Arterial Intervention Guidelines

Guideline Page

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General Information for Vascular Intervention Requests

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General requirements

eviCore applies an evidence-based approach to evaluate the most appropriate medically necessary care for each individual. This evaluation requires submission of legible medical records pertinent to the test, treatment, or procedure requested by the provider.

Information to establish medical necessity

Medical necessity for the request cannot be established when the medical records provided cannot be read or do not include sufficiently detailed information to understand the individual's current clinical status.

Specific elements of an individual's medical records commonly required to establish medical necessity include, but are not limited to

- Recent (within 6 months) in-person clinical evaluation which includes a detailed history and physical examination
- Laboratory studies
- Imaging studies
- Pathology reports
- Procedure reports
- Reports from other providers participating in treatment of the relevant condition

Documentation requirements for vascular intervention requests

Documentation requirements needed to complete a prior authorization request for vascular surgery include **ALL** of the following:

- Procedure proposed
- Condition being treated
- Detailed documentation of provider-directed conservative treatment, duration and frequency of treatment, and the response to such treatments, if applicable
- Detailed documentation of location and size of aneurysmal disease, if present

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- Detailed documentation regarding nature of the critical limb ischemia: non-healing wound or ischemic rest pain, if applicable
- Recent (within 6 months) written reports of any of the following diagnostic imaging modalities and studies acceptable for purposes of the Vascular Surgery guidelines:
  - Ankle-brachial indices, segmental pressures and pulse volume recordings as applicable
  - Duplex ultrasound including carotid, lower extremity and abdominal
  - CTA abdomen/pelvis with or without lower extremity run-off
  - MRA abdomen/pelvis with or without lower extremity run-off
  - Angiogram
- Recent (within 6 months) clinical evaluation documenting:
  - Symptoms (if lifestyle-limiting, detailed documentation regarding quality of life parameters that are affected)
  - Physical exam findings

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 TIA's (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 indicated on an intra-operative basis

Background and supporting information

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

Cerebrovascular Endovascular Embolization and Stents

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Cerebrovascular Endovascular Embolization and Stents

Procedures

- Endovascular procedures may include:
  - Embolization (including coiling)
  - Balloon angioplasty
  - Stent placement
  - Flow diverters

Cerebrovascular Embolization and Stent

Procedure Description	CPT®
Transcatheter permanent occlusion or embolization (e.g. for tumor destruction, to achieve hemostasis, to occlude a vascular malformation), percutaneous, any method, central nervous system (intracranial, spinal cord)	61624
Balloon angioplasty, intracranial (e.g. atherosclerotic stenosis), percutaneous [not covered for prophylactic percutaneous transluminal angioplasty of intracranial arteries after aneurysmal subarachnoid hemorrhage] [dual diagnosis needed – subarachnoid hemorrhage and ischemia]	61630
Transcatheter placement of intravascular stent(s), intracranial (e.g. atherosclerotic stenosis), including balloon angioplasty if performed [not covered for prophylactic percutaneous transluminal angioplasty of intracranial arteries after aneurysmal subarachnoid hemorrhage] [dual diagnosis needed – subarachnoid hemorrhage and ischemia]	61635

Indications

- Endovascular treatment of intracerebral pathology is indicated when there is documentation of **any** of the following:
  - Unruptured Aneurysms: Treatment is indicated at >5mm

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- Ruptured Aneurysms and/or Subarachnoid Hemorrhage at any size
- Arteriovenous Malformations for any size

Non-indications

- Endovascular treatment is not indicated for intracranial atherosclerosis

Background and supporting information

Cerebral aneurysm is a bulging, weakened area in the wall of a blood vessel resulting in an abnormal widening or ballooning greater than 50% of the vessel's normal diameter (width).

The causes of aneurysms are varied. They may be congenital or hereditary, or may be caused by other medical conditions or injury.

The risk of rupture for an asymptomatic aneurysm is 1% per year or less, this risk increases with size, size increase over time, family history, and history of prior subarachnoid hemorrhage (SAH). Endovascular treatment options for aneurysm include coil embolization, balloon remodeling, stent-assisted coil embolization, and/or flow diverters. Treatments for ruptured cerebral aneurysms include surgical clipping, endovascular coiling and/or use of flow diverters. Stenting of a ruptured aneurysm is associated with increased morbidity and mortality and is only considered when less risky options are not available. Cerebral angioplasty is reasonable in patients with symptomatic cerebral vasospasm, particularly those not responding to hypertensive therapy. Treatment should be done early to prevent re-rupture. With conservative management, the risk of aneurysm re-bleeding is 20% to 30% in the first month and then approximately 3% per year.

Most brain AVMs are sporadic and do not have an underlying genetic cause. Conservative management, endovascular embolization, radiation and operative resection are four modalities that can be considered in the treatment of brain AVM. These modalities may be performed either in isolation or in combination.

Intracranial atherosclerosis: Stroke or TIA (transient ischemic attack) can be caused by symptomatic intracranial atherosclerosis. For patients with cerebral ischemia attributable to stenosis of an intracranial artery, the mainstay of treatment consists of risk factor modification and medications. Angioplasty and/or stenting is generally not recommended given the low rate of stroke on medical management and the inherent peri-procedural risk of endovascular treatment. Intervention may be considered on a case-by-case basis for failure of maximal medical therapy in complex scenarios.

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Carotid and Vertebral Revascularization

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Coding

Procedures indicated for carotid revascularization

Procedure	CPT®
Carotid Angioplasty/Stent	CPT®
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	CPT®

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Procedure	CPT®
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)	CPT®
Transcatheter placement cervical carotid open or percutaneous with embolic protection	37215
Non-selective catheter placement, thoracic aorta, with angiography of the extracranial carotid, vertebral, and/or intracranial vessels, unilateral or bilateral, and all associated radiological S&I, includes arch, when performed	36221
Selective catheter placement, common carotid or innominate artery, unilateral, any approach, with angiography of the ipsilateral extracranial carotid circulation and all associated radiological S&I, includes arch	36222
Selective catheter placement, common carotid or innominate artery, unilateral, any approach, with angiography of the ipsilateral intracranial carotid circulation and all associated radiological S&I, includes angiography of the extracranial carotid and cervicocerebral arch, when performed	36223
Selective catheter placement, internal carotid artery, unilateral, with angiography of the ipsilateral intracranial carotid circulation, includes angiography of the extracranial carotid and cervicocerebral arch	36224
Selective catheter placement, subclavian or innominate artery, unilateral, with angiography of the ipsilateral vertebral circulation and all associated radiological S&I, includes angiography of the arch, when	36225
Selective catheter placement, vertebral artery, unilateral, with angiography of the ipsilateral vertebral circulation and all associated radiological S&I, includes angiography of the arch, when performed	36226
Selective catheter placement, external carotid artery, unilateral, with angiography of the ipsilateral external carotid circulation and radiological S&I	36227

Carotid revascularization - Criteria

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:

- For prior authorization requirements, see Prior Authorization Requirements
- 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

Carotid endarterectomy (CEA)

Indications

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

- CEA is considered **medical necessary** when **one** of the following is met
  - Symptomatic carotid stenosis-when there is documentation of both
    - Carotid lesion corresponds anatomically to the individual's symptoms or CTA or MRA findings in the distribution of carotid lesion and one of the following:
      - 50-99% stenosis by angiogram, CTA, MRA
      - Carotid duplex >70% (the lower value should be >70% if reported as a range) otherwise CTA or MRA needed to confirm

      Documentation of any of the following
      - Transient ischemic attack (TIA)
      - Focal cerebral ischemia producing a non-disabling stroke
      - Transient monocular blindness (amaurosis fugax)
  - Asymptomatic carotid stenosis (as documented by clinical notes):
    - Stenosis between 70%-99% on carotid duplex, CTA, MRA, or angiogram within last 6 months. Radiologist/Surgeons read using NASCET criteria must be documented for CTA/MRA/angiogram, providing an precise degree of stenosis

Carotid angioplasty or stent

Carotid stenting (CAS)

Carotid stenting (CAS) for atherosclerotic disease is considered medically necessary when **all** of the following

- Criteria for CEA has been met with **one** of the following
  - Symptomatic carotid stenosis (as documented by clinical notes) demonstrated to be ≥70% via carotid duplex, CTA or MRA or angiography within six months and any of the following:
    - Transient ischemic attack (TIA)
    - Focal cerebral ischemia producing a non-disabling stroke
    - Transient monocular blindness (amaurosis fugax)
  - Asymptomatic carotid stenosis (as documented by clinical notes) >80% demonstrated via carotid duplex, CTA, MRA or angiography within six months (carotid stenosis documented by duplex must be confirmed by angiography prior to performing the procedure)
- Individual is considered **high risk** for CEA due to a documented history of **any** of the following significant comorbidities or anatomic risk factors:
  - Significant comorbid conditions including but not limited to
    - 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)
  - Anatomic risk factors include
    - 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
- Carotid artery stenosis shall be measured by carotid duplex, CT or MR imaging or angiography and recorded in the patient's medical records (carotid stenosis documented by duplex must be confirmed by angiography prior to performing the procedure)

- If the stenosis is measured by ultrasound prior to the procedure, then the degree of stenosis must be confirmed by angiography at the start of the procedure. Angiography can be performed at the time of the planned intervention.

Transcarotid stenting (TCAR)

- TCAR is considered medically necessary when criteria for CEA has been met AND
  - Has one high risk criteria for CEA (see above), AND
  - No anatomical or technical contraindications to performing the procedure are documented by intervention in addition to all of the following:
    - CCA is at least 6 mm diameter
    - No prior CCA intervention including stenting
    - No concern for contralateral vagus or recurrent laryngeal nerve injury
    - CCA length of at least 5 cm prior to bifurcation

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 patients 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** the following criteria are met:

- Failure of antiplatelet therapy or anticoagulation therapy
- One of the following recurrent symptoms after treatment of nonvascular etiologies:
  - 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
- Contralateral vertebral ends in posteroinferior cerebellar
- Contralateral vertebral 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

Background and supporting information

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 patients 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 patients 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 patient 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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Society of NeuroInterventional Surgery, Society for Vascular Medicine, and Society for Vascular Surgery [published correction appears in Circulation. 2011 Jul 26;124(4):e145. Dosage error in article text]. *Circulation*. 2011;124(4):489-532. doi:10.1161/CIR.0b013e31820d8d78.

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)	CPT®
Endovascular repair of descending thoracic aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption); involving coverage of left subclavian artery origin, initial endoprosthesis plus descending thoracic aortic extension(s), if required, to level of celiac artery origin	33880
Endovascular repair of descending thoracic aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption); not involving coverage of left subclavian artery origin, initial endoprosthesis plus descending thoracic aortic extension(s), if required, to level of celiac artery origin	33881
Placement of proximal extension prosthesis for endovascular repair of descending thoracic aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption); initial extension	33883

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Procedure	CPT®
Placement of proximal extension prosthesis for endovascular repair of descending thoracic aorta (eg, aneurysm, pseudoaneurysm, dissection, penetrating ulcer, intramural hematoma, or traumatic disruption); each additional proximal extension (List separately in addition to code for primary procedure)	33884
Placement of distal extension prosthesis(s) delayed after endovascular repair of descending thoracic aorta	33886

Thoracic and thoracoabdominal aorta - criteria

General guidelines

Indications for intervention include **one** of the following:

- 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/emergent request with regard to thoracic aortic pathology are not rare and are indicated when patients are symptomatic, defined as **any** of the following:

- 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 of a thoracic aortic aneurysm via open surgical repair or TEVAR is considered medically necessary when **any** of the following criteria are met:

- Thoracic aorta ≥5.5cm in asymptomatic patients as documented by CTA/MRA chest
- Thoracic aorta of any size in a patient 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's 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 descending thoracic aorta or to a previously repaired type A dissection with extension into the descending thoracic aorta.

- Repair of hyperacute (<24 hours from onset of symptoms) and 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 involve 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 involve 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 patients with a previously treated type A dissection with an elephant trunk or equivalent

Traumatic aortic transection

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

TEVAR is considered medically necessary in patients 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

Other pathologies

TEVAR is considered medically necessary to treat symptomatic high grade stenosis, aneurysmal disease, or impending or frank rupture when there are other pathologies affecting the thoracic aorta including but not limited to:

- Coarctation of the aorta when **both**:
  - Confirmed by CTA/MRA Chest
  - Symptomatic clinical presentation
- Thoracic Aorta Intramural Hematoma (IMH) and Penetrating Aortic Ulcer (PAU) confirmed by CTA/MRA Chest
- Various vasculitides with high grade stenosis or aneurysm confirmed by CTA/MRA Chest

Abdominal Aortic Dissection, Intramural hematoma, Penetrating Aortic Ulcer

TEVAR, or EVAR is considered medically necessary to treat aortic dissection affecting the abdominal aorta for **any** of the following:

- Symptomatic including recurrent or persistent abdominal or back pain despite medical management
- Presents with ischemia of the visceral organs including the bowels and solid organ

Background and supporting information

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.

References

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Abdominal Aorta and Iliac Artery Pathology

PVI.103.A
v2.0.2024

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 (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34701

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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 rupture including temporary aortic and/or iliac balloon occlusion, when performed (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34702
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 (eg, 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 (eg, 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 (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulcer)	34705

Procedure codes	CPT®
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 (eg, for aneurysm, pseudoaneurysm, dissection, penetrating ulcer, traumatic disruption)	34706
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 (eg, 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 (eg, for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation, traumatic disruption)	34708
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 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 (eg, for aneurysm, pseudoaneurysm, dissection, arteriovenous malformation, penetrating ulcer), unilateral	34718
Endovascular repair of visceral aorta (eg, 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 endoprostheses (superior mesenteric, celiac or renal artery)	34841
Endovascular repair of visceral aorta (eg, 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 (eg, 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 (eg, 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

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Procedure codes	CPT®
Endovascular repair of visceral aorta and infrarenal abdominal aorta (eg, 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 (eg, 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
Endovascular repair of visceral aorta and infrarenal abdominal aorta (eg, 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 (eg, 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

Abdominal Aorta - criteria

General Guidelines

Urgent/emergent requests are for symptomatic patients and are indicated in any of the following conditions:

- Cases of active bleeding
- Impending rupture
- Acute limb ischemia
- Paralysis

Abdominal Aortic Aneurysm - criteria

Repair of an abdominal aortic aneurysm via open surgical repair or EVAR is considered medically necessary when ANY of the following criteria are met:

- Abdominal aorta ≥5cm in asymptomatic patients documented by imaging
- Abdominal aortic aneurysm of any size ≥3cm in a patient 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
- Patients with a growth rate of ≥0.5cm/yr in an aorta that is between 3cm to 5cm in diameter
- Patients with 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) and acute type B (1 to 14 days since onset of symptoms) aortic dissection is considered medically necessary in the event of **any** of the following:

- Acute limb ischemia or malperfusion as demonstrated clinically
- Persistent abdominal pain despite adequate blood pressure control (≥2 normal BP measurements) as documented by clinical notes
- Aortic expansion ≥5 cm as documented by imaging
- Progression of dissection to previously uninvolved portions of the aorta documented by imaging

Repair of a sub-acute type B aortic dissection (15-90 days since onset of symptoms) treated with medical management is considered medically necessary in the event of **any** of the following:

- Persistent back pain despite adequate blood pressure control as documented by clinical notes

- Pseudoaneurysm formation documented by imaging
- Progression of dissection to involve previously uninvolved portions of the aorta documented by imaging
- Continued expansion of the aortic diameter ≥0.5cm documented by imaging
- Dynamic flap presenting with intermittent ischemia as documented by clinical signs/ symptoms

Repair of a chronic type B 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

Iliac Artery Aneurysm

Criteria

Treatment is indicated for a common iliac artery aneurysm ≥3cm in diameter.

Endovascular repair of iliac artery by deployment of an iliac branched endograft (CPT® 34717) is medically necessary if there is documentation 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 that meets criteria for clinical significance (greater than 3.5 cm in diameter)
- There is contralateral internal iliac artery occlusion

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

Background and supporting information

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.

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Peripheral Vascular, Non-coronary Stents

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General information

Atherosclerosis is a systemic disease and patients will often present with multi-level disease. Intraoperative decision making may lead to changes in the original procedure requested. Sequential procedures may also be indicated during the procedure to maintain or re-establish patency. These additional procedures are necessary because the initial approach was unsuccessful or only partially successful with regard to patency of the target vessel.

Procedures for peripheral atherosclerosis can include:

- Surgery, including surgical exposure of vessels, endarterectomy or bypass
- Open or percutaneous thrombectomy
- Open or percutaneous embolectomy
- Atherectomy
- Catheter directed thrombolysis
- Additional PTA or stent placement

Coding

Procedures

Peripheral vascular non-coronary stent procedures

Procedure description	CPT®
Revision, femoral anastomosis of synthetic arterial bypass graft in groin, open; with autogenous vein patch graft	35884
Revascularization, endovascular, open or percutaneous, iliac artery, unilateral, initial vessel; with transluminal angioplasty	37220
Revascularization, endovascular, open or percutaneous, iliac artery, unilateral, initial vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	37221

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Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, iliac artery, each additional ipsilateral iliac vessel; with transluminal angioplasty (List separately in addition to code for primary procedure)	37222
Revascularization, endovascular, open or percutaneous, iliac artery, each additional ipsilateral iliac vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	37223
Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal angioplasty	37224
Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with atherectomy, includes angioplasty within the same vessel, when performed	37225
Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	37226
Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal stent placement(s) and atherectomy, includes angioplasty within the same vessel, when performed	37227
Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal angioplasty	37228
Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with atherectomy, includes angioplasty within the same vessel, when performed	37229
Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	37230
Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal stent placement(s) and atherectomy, includes angioplasty within the same vessel, when performed	37231
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with transluminal angioplasty (List separately in addition to code for primary procedure)	37232

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Procedure description	CPT®
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with atherectomy, includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	37233
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	37234
Revascularization, endovascular, open or percutaneous, tibial/peroneal artery, unilateral, each additional vessel; with transluminal stent placement(s) and atherectomy, includes angioplasty within the same vessel, when performed (List separately in addition to code for primary procedure)	37235
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
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
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

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Procedure description	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 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

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** indicated 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
- Contrast volume given is greater than 250 ml

Primary stenting is medically necessary when Percutaneous Transluminal Angioplasty (PTA) alone is not expected to provide a durable result for patients 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.

Upper extremity and other peripheral artery indications

Brachiocephalic arteries

PTA and stenting is 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
- Upper extremity claudication when there is documentation symptoms 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, are demonstrated on advanced imaging to have a high grade stenosis

Renal artery

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

- Renal artery dissection
- Renal artery aneurysm ≥2cm
- Renal artery atherosclerosis 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 diuretic, or intolerance to medications
- Ischemic nephropathy with chronic kidney disease (CKD) with eGFR <45 cc/min

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

Mesenteric vessels

This includes chronic mesenteric ischemia. Documentation detailing the previous workup for the GI symptoms may include endoscopy, angiography or advanced radiographic imaging. Treatment of the mesenteric vessels is indicated when there is documentation of **both** of the following:

- Symptoms that are felt to be a manifestation of 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

Lower extremity arterial indications

Initial treatment

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

- Clinical history documents **one** of the following conditions:
  - Critical limb ischemia documented in the clinical note by **any** of the following:
    - Non-healing ischemic wounds present for ≥two weeks despite ongoing provider-directed wound care of at least two weeks
    - Gangrene where revascularization is felt to be needed to allow for minor amputation
    - Ischemic rest pain demonstrated by:
      - Symptomatology suggestive of rest pain (e.g., pain in the foot while recumbent that is relieved when foot is dependent present ≥2 weeks) and either
        - Objective evidence of ABI's <0.5 in non-diabetics
        - Monophasic waveforms at the feet on noninvasive studies in individuals noted to have noncompressible vessels on ABI such as diabetics or patients with end-stage renal disease
  - Lifestyle limiting claudication 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

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  - Functional limitations that significantly impact the quality of life and/or occupation of the patient
  - 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 or foot
    - infra - popliteal arteries- ankle and foot

    Note:

    Intervention for below knee vessels is unsupported for the treatment of claudication.

- Imaging performed prior to the planned procedure confirms location and degree of stenosis (≥50%) by objective criteria.
- Treatment of target lesion will allow inline flow to the foot, with at least one run-off vessel

Repeat intervention

- Re-intervention in a patient who has previously undergone angioplasty/stenting or bypass in the lower extremity arteries (aorto-iliac, superficial femoral and infra-popliteal arteries) for critical limb ischemia considered medically necessary for any **one** of the following:
  - Previous Endovascular Intervention: Drop in ABI of ≥0.15 on routine surveillance or duplex finding of peak systolic velocity (PSV) ≥190 cm/s or Velocity ratio ≥1.5 AND one of the following:
    - Recurrence of rest pain and/or claudication as documented by clinical notes
    - Progression of wound as defined by any increase in size of the wound, new infection or lack of 50% area reduction in 4 weeks
  - Previous Lower Extremity Bypass: Drop in ABI of ≥0.15 on routine surveillance AND one of the following:
    - Recurrence of rest pain and/or claudication as documented by clinical notes
    - Progression of wound as defined by any increase in size of the wound, new infection or lack of 50% area reduction in 4 weeks OR
    - If Vein bypass: PSV ≥180 cm/s or Velocity ratio ≥2, or end diastolic velocity (EDV) <45 cm/s
    - If Prosthetic bypass: low graft velocity <45 cm/s

- Re-intervention in a patient who has previously undergone angioplasty/stenting for claudication is appropriate when there is recurrent symptomatology in the setting of noninvasive studies demonstrating **any** of the following:
  - Drop in ABI of ≥0.15 or a drop from a normal ABI back to an abnormal ABI (<0.9)
  - Recurrent lesion seen on recent duplex (within three months)
  - New lesion seen on recent duplex (within three months)
- In asymptomatic patients:
  - 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
  - Stent with high grade stenosis defined as PSV ≥275 cm/s or Velocity ratio ≥3.5
- Stent placement in infra-popliteal vessels is almost never indicated and in those cases, the rationale for stent placement must be thoroughly explained in the record.

Atherectomy

Critical limb ischemia

Atherectomy is indicated for critical limb ischemia, including tissue loss and ischemic rest pain, AND the patient would otherwise satisfy criteria for intervention

Claudication

Atherectomy is indicated for claudication as an adjunct to angioplasty prior to stenting when all of the following are met:

- Criteria for intervention have been met
- Lesions result in ≥70% stenosis caused by a highly calcified eccentric plaque
- Treatment of target lesion will establish inline flow to the foot, with at least 1 runoff vessel
- Lesion is 20 cm or less in length
- Debulking to <30% diameter stenosis is attainable

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 is **not** considered medically necessary in **either**:

- Individuals who are asymptomatic
- Lesions that are not high-grade or critical (≥50%)

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Intravascular lithotripsy

Coding

Intravascular lithotripsy procedures

Description	CPT®
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
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

Intravascular lithotripsy non-indications

There is insufficient evidence to support the routine use of Intravascular Lithotripsy. It is considered to be investigational, experimental, or unproven.

Background and supporting information

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

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Venous Intervention Guidelines

Guideline Page

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General Information for Venous Intervention Requests

PVI.200.A
v2.0.2024

General requirements

eviCore applies an evidence-based approach to evaluate the most appropriate medically necessary care for each patient. This evaluation requires submission of legible medical records pertinent to the test, treatment, or procedure requested by the provider.

Information to establish medical necessity

Medical necessity for the request cannot be established when the medical records provided cannot be read or do not include sufficiently detailed information to understand the individual's current clinical status.

Specific elements of an individual's medical records commonly required to establish medical necessity include, but are not limited to

- Recent (within 6 months) in-person clinical evaluation which includes a detailed history and physical examination
- Laboratory studies
- Imaging studies
- Pathology reports
- Procedure reports
- Reports from other providers participating in treatment of the relevant condition

Documentation requirements for venous intervention requests

Documentation requirements needed to complete a prior authorization request for vascular surgery include **ALL** of the following:

- Procedure proposed
- Condition being treated
- Detailed documentation of provider-directed conservative treatment, duration and frequency of treatment, as well as subjective results of the conservative therapy, and the response to such treatments

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- Recent (within 6 months) written reports (interpreted by an independent radiologist) of any of the following diagnostic imaging modalities acceptable for purposes of the Vascular Surgery guidelines:
  - Venous duplex
  - CTV abdomen/pelvis
  - MRV abdomen/pelvis
  - Venogram
  - IVUS – intravascular ultrasound
- Recent (within 6 months) clinical evaluation documenting:
  - Patient symptoms
  - Physical exam findings

Background and supporting information

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

Multiple procedures may be indicated in a patient to treat venous disease. They can be performed simultaneously or sequentially. In general, the larger veins are treated first with the expectation that it might limit the amount of smaller procedures performed. However, the more symptomatic veins can be treated first.

Treatment of Saphenovenous Reflux

PVI.201.A
v2.0.2024

General information

This section applies to the treatment of the following veins

- Greater saphenous vein
- Short saphenous vein
- Anterior Accessory Saphenous Vein
- Posterior Accessory Saphenous Vein

Endovenous ablation (thermal or non-thermal) or high ligation and stripping can be approved for the treatment of saphenovenous reflux

Coding

Procedures

Treatment options for saphenous vein ablation

Thermal options	CPT®
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

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Thermal options	CPT®
Non-thermal options	CPT®
Endovenous ablation therapy of incompetent vein, extremity, by transcatheter delivery of a chemical adhesive (eg, 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 (eg, 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 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
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 (eg, 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 (eg, great saphenous vein, accessory saphenous vein), same leg	36466
High ligation and stripping of the saphenous vein	
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

Thermal options	CPT®
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)	37780

Saphenovenous Reflux Treatment- Criteria

Endovenous ablation is the preferred treatment for saphenovenous reflux. High ligation and stripping can be considered when prior imaging demonstrates a **relative contraindication** to endovenous ablation including any of the following:

- Tortuous saphenous vein
- Aneurysmal saphenous vein (>20mm)
- Presence of intraluminal calcified valves precluding placement of catheter

Treatment of saphenovenous reflux **is not** medically necessary for an asymptomatic state or for purposes of cosmesis.

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

- Symptoms of venous reflux are documented by **one** of the following
  - Venous ulcer of the lower leg
  - Bleeding
  - Superficial phlebitis
  - Documentation of **both** of the following
    - Any of the following symptoms of venous reflux
      - Significant pain, heaviness, achiness, fatigue, or throbbing of the lower extremity after prolonged standing
      - Refractory venous edema that interferes with activities of daily living (when other causes of lower extremity swelling have been excluded)
      - Stasis dermatitis
    - Trial of 8 weeks of conservative therapy, including graded compression stockings, AND any of the following (exercise, periodic elevation, and weight loss (if applicable)), was unsuccessful due to **ANY** of the following reasons
      - No resolution of symptoms
      - Minimal improvement but continued life limiting symptoms
      - Symptoms worsened with conservative treatment and was stopped

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- Results of a recent venous duplex (within 6 months before planned procedure) demonstrates **all** of the following
  - Presence of significant pathologic reflux measuring at least 500ms within ANY of the following vein to be treated:
    - great saphenous vein
    - lesser saphenous vein
    - anterior accessory saphenous
    - posterior accessory saphenous vein
  - Absence of DVT

Background and supporting information

Endovenous ablation has been developed as a minimally invasive alternative to saphenous vein ligation and stripping. The procedure is designed to damage the intimal 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.

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 via injection of a non-compounded sclerosant into the vein via injection through a sheath or butterfly needle.

Since endovenous ablation via whatever method carries a 1% complication risk of DVT, a venous duplex (CPT® 93970, 93971) to rule out an acute DVT can be approved within seven days of the procedure.

High ligation and stripping is a more invasive method of treating saphenous vein reflux than endovenous ablation and has been declining in frequency. This surgery involves tying off the great or small saphenous vein at its junction with the deep system and stripping all or a large segment of the vein essentially removing the dysfunctional vein from the body. High ligation and stripping of the saphenous vein can also be accompanied by phlebectomy of individual varicose vein tributaries.

High ligation of the saphenous vein WITHOUT stripping should NOT be performed in the absence of stripping. High ligation of the saphenous vein in the absence of stripping has been shown to have a high rate or recurrence.

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Treatment of Varicose Saphenous Vein Tributaries

PVI.202.A
v2.0.2024

General Information

Saphenous vein tributaries and unnamed varicose veins ≥3mm with pathologic reflux ≥500ms.

Procedures indicated include

- Ambulatory phlebectomy – removal of the vein directly via small incisions
- Sclerotherapy – injection of a sclerosant agent, including non-compounded foam (Varithena), directly into the veins

Coding

Procedures indicated for treatment of saphenous vein tributaries and unnamed varicose veins

Procedure	CPT®
Phlebectomy	**CPT®**
Stab phlebectomy of varicose veins, 1 extremity; 10-20 stab incisions	37765
Stab phlebectomy of varicose veins, 1 extremity; more than 20 incisions	37766
Ligation, division, and/or excision of varicose vein cluster(s), 1 leg	37785
Sclerotherapy	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 (eg, 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 (eg, great saphenous vein, accessory saphenous vein), same leg	36466

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Procedure	CPT®
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), same leg	36471

Treatment of varicose veins - criteria

Treatment is indicated when **ALL** of the following have been met:

- Results of a recent venous duplex (completed within 6 months prior to date of scheduled procedure) demonstrate refluxing varicosities to be (**both**)
  - ≥3mm in size
  - With ≥500ms of reflux
- Documented symptoms/clinical findings of venous reflux include **any** of the following
  - Significant pain, heaviness, achiness, fatigue, throbbing of the lower extremity after prolonged standing despite conservative therapy of ≥8 weeks
  - Refractory venous edema that interferes with activities of daily living with exclusion of other causes of lower extremity swelling
- Documentation includes history of **one** or more of the following:
  - Venous ulcer of the lower leg
  - Bleeding associated with varicosities of the lower extremities
  - Superficial phlebitis
  - Recent (within the last 6 months) trial of provider-directed 8 weeks of conservative therapy has failed due to (**any**)
    - No resolution of symptoms
    - Minimal improvement but continued life limiting symptoms
    - Symptoms worsened and conservative treatment was stopped

Individuals who have both documented axial vein reflux in the saphenous veins as well as non-saphenous varicose veins, treatment of the varicose veins (phlebectomy or sclerotherapy) is indicated **either**:

- Concurrently at time of treatment of the saphenous vein reflux
- After 6 weeks of observation if symptoms have failed to resolve (conservative therapy is not required)

Ambulatory phlebectomy and/or sclerotherapy <6 weeks after endovenous ablation is **not** considered medically necessary

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Sclerotherapy of veins <3mm is indicated in certain cases as follows:

- The spider/reticular vein is symptomatic with spontaneous bleeding episodes
- Documented signs and symptoms of venous stasis disease ulcerations and exhibits corona phlebectatica (spider veins at the ankle, predominantly the medial malleolus)

Background and supporting information

Phlebectomy involves the removal of individual varicose veins via small incisions in the skin and either via tying off or avulsing the vein. When saphenous vein reflux is present, this should be treated prior to phlebectomy.

Sclerotherapy treatment destroys the lining of the affected vein by injecting an irritant 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 or sotradecol or non compounded foam sclerotherapy (Varithena).

Post procedure assessment by imaging techniques is inappropriate to confirm efficacy or outcome of phlebectomy or sclerotherapy.

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Treatment of Pathologic Perforators

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General information

Perforator veins perforate the deep fascia to connect superficial veins to deep veins.

Treatment of pathologic perforators (≥3.5 mm in size with ≥500 ms of pathologic reflux) is via

- Endovenous ablation – insertion of a catheter emitting radiofrequency or laser that ablates the perforator
- Ligation - an open surgical procedure which involves tying off the pathologic perforator
- Sub-fascial endoscopic perforator surgery – a minimally invasive procedure that involves ligating pathologic perforators
- US guided foam sclerotherapy

Coding

Procedures Treatment of pathologic perforators

Endovenous ablation	CPT®
Unlisted procedure, vascular injection	36299
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 (eg, 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 (eg, great saphenous vein, accessory saphenous vein), same leg	36466
Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; first vein treated	36475

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Endovenous ablation	CPT®
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
Endovenous ablation therapy of incompetent vein, extremity, by transcatheter delivery of a chemical adhesive (eg, 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 (eg, 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 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
Sub-fascial endoscopic perforator surgery (SEPS)	
Vascular endoscopy, surgical, with ligation of perforator veins, subfascial (SEPS)	37500
Unlisted vascular endoscopy procedure	37501

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Endovenous ablation	CPT®
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

Treatment of pathologic perforators- criteria

Indications

Treatment of pathologic perforators is indicated when there is documentation of **ALL** of the following

- Venous stasis ulcer
- A recent (within past 6 months) US 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

Background and supporting information

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 indicated for any other pathology other than stasis ulcer.

Sub-fascial endoscopic perforator surgery (SEPS) is a procedure used to ameliorate the venous hypertension that contributes to the formation and delayed healing of venous stasis ulcers. Via an endoscope through a small incision, an instrument is used to either ablate or ligate the pathologic perforator.

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Treatment of Venous Compression Syndromes

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General information

Conditions treated
- Iliac vein stenosis/occlusion secondary to chronic DVT, stricture, or compression with May-Thurner
- Thoracic Outlet Syndrome (TOS)
- Hemodialysis Outflow Obstruction
- Catheter or cardiac device related Venous outflow obstruction
- Superior Vena Cava Syndrome
- Left Renal Vein Compression (Nutcracker Syndrome)

General information

Conditions treated

- Iliac vein stenosis/occlusion secondary to chronic DVT, stricture, or compression with May-Thurner
- Thoracic Outlet Syndrome (TOS)
- Hemodialysis Outflow Obstruction
- Catheter or cardiac device related Venous outflow obstruction
- Superior Vena Cava Syndrome
- Left Renal Vein Compression (Nutcracker Syndrome)

Coding

Procedures performed for iliac vein stenosis/occlusion/compression

Iliac vein angioplasty/stenting	CPT®
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

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Iliac vein angioplasty/stenting	CPT®
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
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
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 May-Thurner)

Indications

- Iliac vein angioplasty/stenting is indicated when there is documentation of the presence of **one** of the following conditions:
  - Acute lower extremity iliofemoral DVT with underlying iliac vein or Inferior Vena Cava (IVC) compression with ≥50% residual stenosis following thrombolysis or mechanical thrombectomy
  - Non-thrombotic iliac vein or IVC stenosis of ≥50% with presence of venous collaterals with venous stasis ulceration or advanced stasis dermatitis
  - Venous claudication or lifestyle limiting edema with pain in one or both lower extremities when there is documentation of both of the following:

- No identifiable underlying non-vascular cause
- 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 life-limiting symptoms

Upper Extremity Venous angioplasty/stenting for Venous Occlusive Disease

Thoracic Outlet Syndrome (TOS)

Axillary vein and/or subclavian Vein angioplasty/stenting is indicated when there is documentation of the presence of one of the following conditions:

- Acute Axillary and/or subclavian vein DVT with axillary or subclavian vein compression with 50% residual stenosis following thrombolysis and decompression for treatment of associated musculoskeletal abnormality such as first rib resection, cervical rib resection and/or scalenectomy.
- Non-thrombotic axillary vein or subclavian vein stenosis of 50% or more, with presence of venous collaterals, following treatment of associated musculoskeletal abnormality such as first rib resection, cervical rib resection and/or scalenectomy.

Hemodialysis Outflow Obstruction

Venous angioplasty of upper extremity outflow veins is indicated when there is documentation of > 50% stenosis of the outflow vein or ipsilateral central venous stenosis under the following conditions:

- Presence of Ipsilateral arm edema and/or venous claudication.
- Inadequate hemodialysis performance.
- Prolonged bleeding after hemodialysis

Catheter or cardiac device related Venous outflow obstruction

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

Catheter or cardiac device related Venous outflow obstruction

Venous angioplasty of upper extremity outflow veins is indicated when there is documentation of > 50% stenosis of the outflow vein or ipsilateral central venous stenosis under the following conditions:

- Presence of Ipsilateral arm edema and/or venous claudication

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

Superior Vena Cava Syndrome

Venous angioplasty and stenting is indicated when there is evidence of >50% stenosis in the superior vena cava under the following conditions:

- Palliative care in patient's SVC syndrome secondary to advanced malignancy
- Non-malignant SVC syndrome when BOTH of the following are met:
  - Presence of life limiting signs or symptoms such as **any** of the following:
    - Orthopnea
    - Swelling of head and neck
    - Dizziness
    - Blurring of vision
  - Failure symptoms to resolve with conservative therapy including **any** of following:
    - Elevation of head of bed
    - Diuretic therapy
    - Anticogulation therapy

Left Renal Vein Compression (Nutcracker Syndrome)

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

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

Angioplasty and/or stenting is indicated for **re-intervention** when there is recurrent, symptomatic left renal vein compression following surgical treatment.

Hepatic vein thrombosis

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

Idiopathic intracranial hypertension and pulsatile tinnitus

Treatment of idiopathic intracranial hypertension or pulsatile tinnitus with venous angioplasty and/or stenting is considered not medically necessary.

Background and supporting information

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.

Iliac vein compression is an entity known as May-Thurner syndrome and affects the left iliac vein which can lead to chronic edema, varicose veins and venous stasis ulcerations. In approximately 25% of people, the right iliac artery overlies the left iliac vein over the fifth lumbar vertebra and its pulsations can compress the vein increasing the risk of DVT in the left extremity. Treatment is with iliac vein angioplasty/stenting for both acute and chronic left-sided DVT. Prophylactic treatment of May-Thurner syndrome 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.

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Intravascular Ultrasound (IVUS)

Guideline Page

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Intravascular Ultrasound (IVUS)

PVI.300.A
v2.0.2024

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 indicated for use during a diagnostic procedure and again at the time of intervention for **any** of the following:

- To diagnose or perform sizing measurements for urgent or elective thoracic aortic disease, if an approved indication is suspected
- If requested to diagnose or perform sizing measurements for urgent or elective abdominal aortic disease, if an approved indication is suspected
- Evaluation and treatment of iliac vein, abdominal or central Vena Cava obstruction
- Appropriate for lower extremity PAD or peripheral aneurysm indication

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IVUS-Indications

Critical limb ischemia

- IVUS is indicated in evaluation of critical limb ischemia for **any** of the following:
  - 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 indicated in the absence of pre-procedural imaging (such as MRA, CTA, or duplex ultrasound) in the evaluation of **any** of the following:

- Aortic bifurcation and Iliac arteries (including Common Iliac artery, External Iliac artery and Internal Iliac artery)
  - To minimize contrast in patients 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
- Femoral- Popliteal Arteries
  - To minimize contrast in patients 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
  - Vessel sizing prior to use of Drug Coated Balloon or primary stenting [2,3,4 5]
    - In the absence or pre-procedural imaging (such as MRA, CTA or duplex ultrasound)
  - Determine appropriate therapeutic modality based on plaque morphology and burden
    - In the absence or pre-procedural imaging (such as MRA, CTA or duplex ultrasound)

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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Vascular Embolization

Guideline Page

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Vascular Embolization

PVI.400.A
v3.0.2024

Coding

Vascular embolization codes	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

- 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:

- Uterine hemorrhage in the presence of any of the following conditions:
  - Abnormal placental implantation (e.g., placenta accreta or increta)
  - Postpartum hemorrhage, after failure of pharmacologic uterotonic measures, surgical treatments, or uterine massage
  - 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

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
- Moderate to severe LUTS and a very large prostate (> 80 cm^3)
- Identified as not a surgical candidate for any of the following reasons:
  - Advanced age
  - Multiple comorbidities
  - Coagulopathy or inability to stop anticoagulation or antiplatelet therapy.

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

Evidence Discussion

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.

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.

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

Non-indications

- Transcatheter arterial chemoembolization or transcatheter arterial embolization for malignant lesions outside of the liver is **not** considered medically necessary

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

Post EVAR

Embolization of aortic side branches or aortic sac is medically necessary to treat a Type 2 endoleak when there is documentation of **either**:

- sac enlargement

- stable sac size when **both** of the following apply
  - sac size is ≥5cm
  - Type 2 endoleak is present ≥two years

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.

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, the following indications for vascular embolization are considered to be not medically necessary:

- Genicular Artery Embolization (GAE)
- Hemorrhoidal embolization
- All other indications not listed in this guideline

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. Clinical success rates have ranged between 63 and 97% in small studies. 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. 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 full 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 (1C). 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.

Recommendation

There is not enough evidence to support routine use of arterial embolization for hemorrhoidal disease management.

Geniculate Artery Embolization

Osteoarthritis is a common and potentially debilitating disease affecting 10-18% of the population above the age of 60. A chronic, low-grade inflammatory response

causes progressive damage resulting in pain, disability and quality of life issues. Early stage management consists of anti-inflammatories, weight loss and physical therapy to maintain function. Additional therapies including injections of anti-inflammatories, lubricants and ultimately total knee arthroplasty (TKA) are used as the disease progresses.

In 2014, Okuno et al identified the role of hypertrophied synovium and joint hyper-vascularization in nociception. Subsequently they conducted a small study on 14 patients. They found that by treating this hyper-vascular inflammation with geniculate artery embolization, all 14 patients experienced significant decrease in their mean WOMAC total pain scores at one month with additional improvements by 4 months. These improvements were maintained in most patients on follow-up examination at a mean interval of 12 months. The mean overall VAS scores also significantly decreased at 1 week, 1 month and 4 months as well.

In 2020, Bagla et al published on of the first randomized sham-controlled studies of GAE. Fourteen patients were treated with GAE and seven were in the sham control group. At one month VAS and WOMAC scores showed statistically significant improvements compared with the sham procedure and all 7 control patients crossed over to the treatment arm.

In 2021, The Society of Interventional Radiology Research Consensus Panel reported the need for ongoing trials to assess the effectiveness of GAE for osteoarthritis and that these be conducted as sham trials to insure appropriate results. It was noted that placebo effect in prior OA trials may be as high as 40%.

Bhatia et al published a systematic review in 2023 for short-to-midterm outcomes of GAE for mild to moderate osteoarthritis. A total of 13 studies and 399 knees were included in their review. They concluded that GAE was a safe and effective procedure for early and low-grade osteoarthritis in the short and medium term (1-24 months) but more robust evidence is needed to confirm its role.

Limited data is available regarding patients with severe osteoarthritis but data suggest a non-durable response.

There are currently no societal guidelines that support geniculate artery embolization for primary treatment of knee osteoarthritis.

Recommendation

Although geniculate artery embolization shows promise for short-to-midterm outcomes for pain control and quality of life improvement in mild-to-moderate knee osteoarthritis, further evaluation is needed to determine long-term efficacy and appropriate patient selection.

Geniculate artery embolization for treatment of osteoarthritis of the knee is not supported at this time.

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