THE AMERICAN BOARD OF SURGERY

Evaluation and Management of a Patient with a Peripheral Artery Aneurysm

Description of the Activity	Vascular surgeons evaluate and treat patients with a wide variety of peripheral artery aneurysms, in terms of both anatomic location and acuity, and should have a comprehensive understanding of the different causes, clinical presentations, and diagnostic techniques of this disease process. Surgeons should also understand medical and surgical management, including selection criteria for intervention and timing of intervention. Additionally, surgeons should be able to perform perioperative management, including recognition and treatment of complications of interventions, needed follow-up, and surveillance strategies.
Functions	❖ Nonoperative/Preoperative ➢ Synthesize essential information from a patient's referring providers, records, history, physical examination, and initial diagnostic evaluation to develop a differential diagnosis. ➢ Perform an evidence-based, cost-effective diagnostic evaluation, including selective screening. ➢ Determine whether intervention is indicated. ➢ Synthesize an optimal medical management plan for a patient in whom intervention is not indicated. ➢ Communicate the diagnosis and potential treatment options to the patient/caregiver(s) and consultants. ➢ Recognize complications of peripheral aneurysms that require emergency intervention, such as rupture or embolization. ➢ Select a treatment approach consistent with a patient's anatomy, comorbidities, and acuity of presentation. ➢ Obtain informed consent. Describe the indications, risks, benefits, alternatives, and potential complications of the planned intervention, and ensure patient/caregiver understanding. ➢ Synthesize a treatment plan that demonstrates understanding of the operative anatomy, physiology, indications, contraindications, risks, benefits, alternatives, and potential complications of: ▪ Endovascular repair, such as stenting or embolization ▪ Hybrid approaches ▪ Observation ▪ Open repair ❖ Intraoperative ➢ Perform the procedures required to manage peripheral aneurysms. ▪ Endovascular repair: stenting, lysis, embolization ▪ Hybrid repair ▪ Open repair: resection and bypass ➢ Integrate new information discovered intraoperatively to modify the surgical plan or technique as necessary, such as: ▪ End-organ ischemia ▪ Extrinsic vascular compression ▪ Mycotic aneurysm ➢ Work with anesthesia staff, nursing staff, and other perioperative health care professionals to create and maintain an intraoperative environment that promotes patient-centered care.

The vascular surgery EPAs may be further refined based on pilot data and final review by several ABS Council Committees; final versions including any edits stemming from those processes will be available in fall 2024.

THE AMERICAN BOARD OF SURGERY

Evaluation and Management of a Patient with a Peripheral Artery Aneurysm

	❖ Postoperative ➢ Initiate and oversee postoperative care, including monitoring for complications, prescribing appropriate medical therapy (eg, anticoagulation, antiplatelet therapy, lipid-lowering agents), and ordering follow-up imaging. ➢ Communicate with the patient/caregiver(s) and members of the health care team to ensure understanding of postprocedure instructions and the patient's ability to carry out the resultant plan within the context of their life (eg, transportation, living situation, insurance, access to a pharmacy). ➢ Recognize, evaluate, and manage early and late complications following intervention (eg, bleeding, distal embolization, end-organ ischemia, inadequate aneurysm exclusion, infection). ➢ Identify a surveillance and screening plan and indications for reintervention.
Scope	❖ In scope ➢ Brachial artery aneurysms, pseudoaneurysms ➢ Femoral artery aneurysms, pseudoaneurysms ➢ Popliteal artery aneurysms, pseudoaneurysms ➢ Radial artery aneurysms, pseudoaneurysms ➢ Subclavian artery aneurysms, pseudoaneurysms ❖ Out of scope ➢ Mycotic aneurysms ➢ Tibial artery aneurysms ➢ Ulnar aneurysms, hypothenar hammer syndrome ❖ Special Population ➢ Intraoperative consults ➢ Patients with: ▪ Arterial thoracic outlet syndrome and subclavian aneurysms ▪ Collagen vascular disease ▪ Iatrogenic peripheral aneurysms ➢ Pediatric patients with peripheral aneurysms

The vascular surgery EPAs may be further refined based on pilot data and final review by several ABS Council Committees; final versions including any edits stemming from those processes will be available in fall 2024.

THE AMERICAN BOARD OF SURGERY

Evaluation & Management of a Patient with a Peripheral Artery Aneurysm

Level	Preoperative/Nonoperative	Intraoperative Open	Intraoperative Endovascular	Postoperative
1 **<u>Limited Participation</u>** Demonstrates understanding of information and has very basic skills **<u>Framework:</u>** What a learner directly out of medical school should know The attending can show and tell.	• Performs an H&P, including pulses • Recognizes the indications for aneurysm surveillance • Identifies different types of imaging modalities (duplex US, CTA, MRA, arteriography) • Identifies the indications for intervention based on size criteria and other factors (eg, presence of thrombus, growth) • Uses imaging to support operative planning	• Performs basic surgical skills (skin incision, soft tissue dissection, wound closure) • Sutures and knot-ties with security • Demonstrates understanding of sharps safety, safe surgical energy use, and surgical field sterility	• Uses US to visualize access vessel anatomy and patency • Recognizes the importance of maintaining wire access • Demonstrates understanding of basic ALARA principles; wears lead and a dosimeter at all times; uses basic fluoroscopic protection (lead shields, maneuvers)	• Identifies a basic postop problem (pain, surgical site complication) • Recognizes the need for long-term surveillance
2 **<u>Direct Supervision</u>** Demonstrates understanding of the steps of the operation	• Orders imaging (duplex US, CTA, MRA, arteriography) and interprets imaging (presence and location of aneurysm, thrombus, evidence of distal embolization)	• Usually demonstrates coordination between hands and maintains the optimal tissue plane when dissecting vessels • Demonstrates respect for tissues (gentle	• Uses US to obtain vascular access; demonstrates basic catheter and wire-handling techniques • Uses fluoroscopy techniques and shielding to decrease radiation exposure to a	• Identifies a postop complication (MI, bleeding, thromboembolism) and orders appropriate testing • Communicates expected standard postop care to a patient/caregiver(s) and

The vascular surgery EPAs may be further refined based on pilot data and final review by several ABS Council Committees; final versions including any edits stemming from those processes will be available in fall 2024.

THE AMERICAN BOARD OF SURGERY

Evaluation & Management of a Patient with a Peripheral Artery Aneurysm

Level	Preoperative/Nonoperative	Intraoperative Open	Intraoperative Endovascular	Postoperative
but requires direction through principles and does not know the nuances of a basic case **<u>Framework:</u>** The learner can use the tools but may not know exactly what, where, or how to do it. The attending gives active help throughout the case to maintain forward progression.	• Describes the natural history, surveillance plan, and indications for repair • Determines which imaging modality to use given anatomic and patient factors (axial imaging vs arteriogram, contrast allergy, renal disease) • Synthesizes clinical data (medical comorbidities) and imaging findings (aneurysm and runoff vessel anatomy) to guide the decision between an open, endo, or hybrid technique	handling of vessels) and developing skill in instrument handling (using a Castroviejo needle driver) • Performs parts of an anastomosis with frequent prompting and assistance	patient and operator with guidance	consulting clinicians and describes long-term follow-up
3 **<u>Indirect Supervision</u>** Can do a basic operation but will not recognize abnormalities and does not understand the	• Interprets a physical exam, imaging studies, and risk factors to formulate a treatment plan suited to the patient (surveillance, endo vs open intervention) • Recognizes the impact of disease progression (aneurysm growth) and complications (embolization,	• Demonstrates efficient instrument handling, safe exposure, dissection, and control of vessels • Performs a complete anastomosis with minimal prompting and passive assistance	• Performs a diagnostic angiogram, efficiently catheterizes branches, and delivers a stent/balloon/graft to the appropriate location • Identifies common variations of the arterial anatomy on imaging; locates potential access sites to perform endo repair; anticipates	• Identifies, evaluates, and manages a complex postop complication (MI, bleeding, thromboembolism) and escalates the level of care as needed • Recognizes abnormal surveillance imaging findings and their impact on the longitudinal care plan

The vascular surgery EPAs may be further refined based on pilot data and final review by several ABS Council Committees; final versions including any edits stemming from those processes will be available in fall 2024.

THE AMERICAN BOARD OF SURGERY

Evaluation & Management of a Patient with a Peripheral Artery Aneurysm

Level	Preoperative/Nonoperative	Intraoperative Open	Intraoperative Endovascular	Postoperative
nuances of an advanced case **Framework:** The learner can perform the operation in straightforward circumstances. The attending gives passive help. This help may be given while scrubbed for more complex cases or during a check-in for more routine cases.	rupture, mass effect) on a patient's longitudinal care plan, individualizing risks and benefits to the patient • Develops a patient-specific plan for intervention, considering endo and open surgical options	• Identifies common variations of arterial anatomy on imaging; anticipates complications or high-risk anatomy	complications or high-risk anatomy • Accesses resources to determine exam-specific radiation dose information; independently manages the fluoroscopy system; uses radiation protection devices and techniques	
4 **Practice Ready** Can manage more complex patient presentations and operations and take care of most cases **Framework:**	• Manages a patient with complex anatomy and comorbidities (ALI, sepsis, symptomatic aneurysm) • Directs and orders resuscitation, operative optimization and planning, anticoagulation needs, and cardiac risk stratification to	• Proficiently handles instruments and equipment, uses assistants, and guides the conduct of the operation; makes independent intraop decisions; anticipates when assistance is needed	• Plans and delivers a stent graft to exclude a peripheral aneurysm; troubleshoots and treats an endoleak; manages an intraop complication • Adapts the management plan based on a change in the anatomy, including	• Coordinates and leads a multidisciplinary care team in the management of a postop complication • Independently alters longitudinal care based on complications

The vascular surgery EPAs may be further refined based on pilot data and final review by several ABS Council Committees; final versions including any edits stemming from those processes will be available in fall 2024.

THE AMERICAN BOARD OF SURGERY

Evaluation & Management of a Patient with a Peripheral Artery Aneurysm

Level	Preoperative/Nonoperative	Intraoperative Open	Intraoperative Endovascular	Postoperative
The learner can treat all straightforward peripheral arterial aneurysm cases and has a strong understanding of surgical options and techniques for less common scenarios. The attending is available at the request of the learner but is not routinely needed for common presentations, though input may be needed for more complex presentations.	allow expeditious intervention if needed ● Independently alters longitudinal care based on disease progression (aneurysm growth), complications (embolization, rupture, mass effect), or patient factors (worsening comorbidities) ● Independently initiates cross-sectional and duplex imaging and 3D reformatting to identify abnormal findings and plan an intervention ● Adapts the plan to changes in the presentation of a peripheral aneurysm, including changes in a patient's medical condition or presentation (distal embolization, thrombosis of aneurysm) ● Adapts the management plan based on a change in the patient's anatomy, including from endo to open		from endo to open intervention ● Communicates the relative risks and benefits of exam-specific radiation exposure to a patient and ensures colleagues and staff practice ALARA principles	

The vascular surgery EPAs may be further refined based on pilot data and final review by several ABS Council Committees; final versions including any edits stemming from those processes will be available in fall 2024.