



## Evaluation and Management of a Patient with a Symptomatic or Ruptured Aortoiliac Aneurysm

<b>Description of the Activity</b>	Vascular surgeons evaluate and treat patients with rapidly expanding or ruptured aortoiliac aneurysms. These surgeons should have a comprehensive understanding of the presentation, diagnostic techniques, and surgical management of this disease process, including selection criteria for intervention (or palliative care/hospice), type of intervention, and timing of intervention. Additionally, surgeons should understand perioperative management, including recognition and treatment of complications of surgical intervention, follow-up, and surveillance strategies.
<b>Functions</b>	<ul style="list-style-type: none"><li>❖ Nonoperative/Preoperative<ul style="list-style-type: none"><li>➤ Synthesize essential information from a patient's referring providers, records, history, physical examination, and initial diagnostic evaluation to develop a differential diagnosis.</li><li>➤ Determine whether intervention is indicated, including discussion of nonoperative, expectant management in select patients.</li><li>➤ Synthesize a palliative care plan for a patient in whom intervention is not indicated.</li><li>➤ Select a surgical approach consistent with a patient's anatomy, comorbidities, and presentation.</li><li>➤ Obtain informed consent. Describe the indications, risks, benefits, alternatives, and potential complications of the planned operation, and ensure patient/caregiver understanding.</li><li>➤ Synthesize an operative plan that demonstrates understanding of the operative anatomy, physiology, indications, contraindications, risks, benefits, alternatives, and potential complications of:<ul style="list-style-type: none"><li>▪ Open abdominal aortic aneurysm (AAA) repair via retroperitoneal approach</li><li>▪ Open AAA repair via transperitoneal approach</li><li>▪ Endovascular abdominal aortic aneurysm repair (EVAR)</li></ul></li></ul></li><li>❖ Intraoperative<ul style="list-style-type: none"><li>➤ Perform the procedures required to manage symptomatic, ruptured, or inflammatory aortoiliac aneurysms<ul style="list-style-type: none"><li>▪ Open ruptured AAA, retroperitoneal</li><li>▪ Open ruptured AAA, transperitoneal</li><li>▪ EVAR</li></ul></li><li>➤ Integrate new information discovered intraoperatively to modify the surgical plan or technique as necessary, such as:<ul style="list-style-type: none"><li>▪ Coagulopathy</li><li>▪ Difficult proximal control or inadequate proximal anastomosis</li><li>▪ Hemodynamically unstable patient</li><li>▪ Inability for a patient to ventilate and the need for laparotomy to relieve abdominal compartment syndrome</li><li>▪ Inability to cannulate the stent graft contralateral gate</li><li>▪ Inadvertent coverage of renal or hypogastric arteries during EVAR</li><li>▪ Inadvertent iliac rupture during EVAR</li><li>▪ Injury to iliac veins during distal control</li></ul></li></ul></li></ul>

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	<ul style="list-style-type: none"><li>▪ Lack of femoral pulses or distal signals following repair</li><li>▪ Need for conversion to open repair</li><li>▪ Type I/III endoleak</li><li>➤ Work with anesthesia staff, nursing staff, and other perioperative health care professionals to create and maintain an intraoperative environment that promotes patient-centered care.</li><li>❖ Postoperative<ul style="list-style-type: none"><li>➤ Initiate and oversee postoperative care, including postoperative disposition, resuscitation, appropriate medical therapy, and follow-up imaging and care.</li><li>➤ 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).</li><li>➤ Recognize, evaluate, and manage early and late complications following symptomatic, ruptured, or inflammatory abdominal aortic or iliac artery aneurysms.</li><li>➤ Identify a surveillance plan and indications for reintervention.</li></ul></li></ul>
<b>Scope</b>	<ul style="list-style-type: none"><li>❖ In scope<ul style="list-style-type: none"><li>➤ Inflammatory AAA</li><li>➤ Ruptured iliac artery aneurysm (including hypogastric)</li><li>➤ Ruptured infrarenal AAA</li><li>➤ Symptomatic (pain, rapidly expanding) aneurysm</li></ul></li><li>❖ Out of scope<ul style="list-style-type: none"><li>➤ Aortoenteric fistula (AEF)</li><li>➤ Mycotic aneurysm</li><li>➤ Patients with connective tissue disorders</li><li>➤ Pediatric patients</li><li>➤ Ruptured/symptomatic aneurysm related to prior aortic dissection</li><li>➤ Supra- or pararenal aneurysm</li></ul></li></ul>



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<p><b>1</b></p> <p><b><u>Limited Participation</u></b></p> <p>Demonstrates understanding of information and has very basic skills</p> <p><b><u>Framework:</u></b> What a learner directly out of medical school should know</p> <p>The attending can show and tell.</p>	<ul style="list-style-type: none"> <li>Elicits a history and performs a vascular exam (abdominal pain, pulses), recognizing the critical nature of this presentation</li> <li>Identifies the need for timely imaging with CTA</li> <li>Communicates with the OR and preps the patient for the OR (labs, pulses/signals documented)</li> <li>Broadly describes open and endo surgical approaches</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrates understanding of sharps safety, safe use of devices, and surgical field sterility</li> <li>Efficiently performs basic surgical tasks, including suturing and knot-tying</li> <li>Demonstrates basic surgical skills, including making an incision and closure</li> <li>Describes potential crises during open repair of a symptomatic or rAAA, including failure to control hemorrhage, injury to adjacent structures, and colonic/lower extremity ischemia</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrates basic understanding of the anatomy of the aorta and iliac vessels</li> <li>Recognizes the importance of maintaining wire position</li> <li>Describes potential crises during EVAR (access issues, dissection, ruptured iliac, failure to control hemorrhage from rAAA)</li> </ul>	<ul style="list-style-type: none"> <li>Identifies a straightforward postop problem (fever, pain, nausea, anemia) and initiates management with guidance</li> <li>Maintains professional and effective communication with a patient/caregiver(s), the ICU, and other specialty teams</li> <li>Communicates with a patient/caregiver(s) about changing conditions, providing routine information</li> </ul>
<p><b>2</b></p> <p><b><u>Direct Supervision</u></b></p> <p>Demonstrates understanding of the steps of the operation but requires direction through principles and</p>	<ul style="list-style-type: none"> <li>Orders vascular imaging studies (CTA) and interprets findings to diagnose a symptomatic or rAAA, including uploading any outside imaging</li> <li>Communicates with the OR, preps the patient for the OR (labs,</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrates respect for tissues (gentle handling of vessels) and developing skill in instrument handling</li> <li>Performs parts of distal anastomoses with frequent prompting and assistance</li> </ul>	<ul style="list-style-type: none"> <li>Uses US to obtain vascular access; demonstrates basic catheter and wire-handling techniques</li> <li>Describes findings during EVAR such as access issues, dissection, ruptured iliac artery, and failure to control hemorrhage</li> </ul>	<ul style="list-style-type: none"> <li>Manages postop problems (eg, chest pain, respiratory distress), including ordering and interpreting additional tests</li> <li>Actively listens to a patient/caregiver(s) to elicit preferences and manage expectations</li> </ul>

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<p>does not know the nuances of a basic case</p> <p><b>Framework:</b> The learner can use the tools but may not know exactly what, where, or how to do it.</p> <p>The attending gives active help throughout the case to maintain forward progression.</p>	<p>pulses/signals, Foley, lines), and communicates with the OR and anesthesia teams about the operative plan</p> <ul style="list-style-type: none"> <li>Ensures necessary imaging, equipment, and basic OR setup are available for urgent repair (open or endo)</li> <li>Identifies whether a patient needs open or endo repair and the steps of these procedures</li> </ul>	<ul style="list-style-type: none"> <li>Describes crises that could occur during the procedure (free rupture/acute hypotension)</li> <li>Describes findings during open repair, such as failure to control hemorrhage, injury to adjacent structures, and colonic/lower extremity ischemia</li> </ul>		<ul style="list-style-type: none"> <li>Communicates relevant operative events and the postop care plan to the ICU</li> </ul>
<p><b>3</b></p> <p><b>Indirect Supervision</b></p> <p>Can do a basic operation but will not recognize abnormalities and does not understand the nuances of an advanced case</p> <p><b>Framework:</b></p>	<ul style="list-style-type: none"> <li>Synthesizes patient data, including imaging, to determine a plan for endo or open treatment</li> <li>Demonstrates understanding of preoperative hemodynamic management (eg, permissive hypotension)</li> <li>Communicates with the OR and anesthesia teams regarding what</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrates efficient instrument handling and safe exposure, dissection, and control of vessels (supraceliac aortic control)</li> <li>Performs a complete proximal and distal anastomosis with minimal prompting and passive assistance</li> <li>Describes the approach to difficult exposure for proximal control or an inadequate proximal anastomosis and uses</li> </ul>	<ul style="list-style-type: none"> <li>Performs a diagnostic angiogram</li> <li>Obtains endo balloon control with assistance</li> <li>Describes a technique to deal with an intraop crisis during EVAR (inability to cannulate contralateral gate, inadvertent coverage of renal or hypogastric artery, type I/III endoleak, inability to ventilate)</li> <li>Describes the EVAR sequence and the necessary equipment</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes and manages a complex vascular critical care complication, identifying the need to return to the OR</li> <li>Delivers complex and difficult information to a patient/caregiver(s) using shared decision-making</li> <li>Communicates with the team efficiently and adapts to different team members' styles; provides feedback to the team, peers, and learners</li> </ul>



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<p>The learner can perform the operation in straightforward circumstances.</p> <p>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.</p>	<p>lines are needed, the need to induce general anesthesia after the patient is prepped, and what blood products are available</p> <ul style="list-style-type: none"> <li>Orders equipment (including devices for EVAR) and positions/drapes the patient</li> <li>Decides on open or endo repair based on interpretation of CT imaging</li> </ul>	<p>adjuncts such as further dissection above the renal arteries or felt during open repair</p> <ul style="list-style-type: none"> <li>Describes an algorithm for diagnosis and treatment when there are no pedal pulses during/after open repair</li> <li>Identifies all critical steps of open repair and the equipment required; advances the procedure with minimal prompting</li> </ul>		
<p><b>4</b></p> <p><b><u>Practice Ready</u></b></p> <p>Can manage more complex patient presentations and operations and take care of most cases</p> <p><b><u>Framework:</u></b> The learner can treat all straightforward symptomatic or rAAA cases and has a strong understanding of</p>	<ul style="list-style-type: none"> <li>Synthesizes patient data, including the acuity of the patient's condition, and formulates a plan for endo or operative intervention, including all relevant details for intervention</li> <li>Obtains timely imaging with CTA; identifies a ruptured aneurysm; identifies subtle findings on relevant imaging studies (retroaortic renal vein, aortocaval fistula)</li> </ul>	<ul style="list-style-type: none"> <li>Anticipates or expeditiously performs emergency supraceliac control of the aorta</li> <li>Proficiently handles instruments and equipment, uses assistants, and guides the conduct of the operation; makes independent intraop decisions; anticipates when assistance is needed</li> <li>Anticipates or recognizes a major open complication such as an aortocaval fistula, iliac vein injury, or</li> </ul>	<ul style="list-style-type: none"> <li>Independently performs EVAR, including endo balloon occlusion of the aorta; troubleshoots and treats an endoleak (PC7 L4)</li> <li>Anticipates or recognizes a major endo complication such as access vessel injury, renal artery coverage, iliac vein injury, or lack of femoral or distal pulses at the end of the case (MK5 L4)</li> <li>Describes the EVAR sequence and equipment needs and identifies critical decision points (endoleak management, intraop complication) (MK4 L4)</li> </ul>	<ul style="list-style-type: none"> <li>Leads the team and provides supervision in managing a complex postop problem, including vascular complications and palliative care</li> <li>Facilitates a caregiver meeting or end-of-life discussion and negotiates a care management plan when interventions may be ineffective</li> <li>Coordinates a caregiver meeting with the various health care teams for a goals-of-care or end-of-life discussion or transition of care</li> </ul>

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<p>surgical options and techniques for less common scenarios.</p> <p>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.</p>	<ul style="list-style-type: none"><li>Communicates with the OR and anesthesia teams regarding what hemodynamic adjuncts are needed and available (eg, cell saver, rapid transfuser) and the medications that will be needed intraoperatively (heparin, mannitol); verifies postop disposition (ICU bed)</li><li>Independently uses multidimensional imaging to determine eligibility for open or endo repair</li></ul>	<p>difficult anastomotic site and responds to control the situation</p> <ul style="list-style-type: none"><li>Remains constantly aware of a patient's physiologic status and preemptively/efficiently communicates with the OR and anesthesia teams</li><li>Identifies all critical steps of the procedure and the equipment required; advances the procedure without prompting; recognizes critical decision points</li></ul>		