

Evidence Discussion (PVD 6.8)

Post Aortic Endovascular/Open Surgery Surveillance Studies

Surgical approaches to aortic repair have evolved over the past several decades. Open repair is still common for treatment of ascending aortic pathology as well as some thoracic/abdominal aortic disease with complex anatomy. In recent years, however, advances in endovascular technology have made this modality preferred for descending thoracic, abdominal and iliac artery repairs.

Multiple studies have been performed with several recommendations for aortic graft surveillance depending on anatomic location and repair type.^{1,2,3} Open repair surveillance tends to use longer frequency intervals due to the durability of the repair approach. While less invasive, endovascular repairs require more frequent monitoring as the graft components have a higher risk of technical complication with a need for repeat intervention.

When an endovascular graft system becomes displaced or does not adhere properly to the native vessel wall, an endoleak may develop. An endoleak increases the risk of rupture within a previously repaired aneurysm sac and may require repeat intervention. Some endoleak types may be monitored with regular surveillance if the aneurysm sac diameter remains stable. However, if the aneurysm sac increases in size or if a high risk endoleak type is detected, repeat intervention with preoperative imaging is indicated to prevent rupture. Post-endoleak repairs also require regular surveillance as these may also be at risk for technical failure over time.^{4,5}

Thoracic aortic surveillance imaging is usually performed with CT/MR due to the anatomic limitations of duplex in this region. Abdominal aortic surveillance after endovascular repair is initially performed with CT/MR to ensure proper alignment of all graft components. Once this has been established, surveillance with duplex ultrasound is indicated unless technical limitations are noted.^{6,7} If an endoleak is detected or if additional pathology such as graft infection is suspected, CT/MR imaging would be appropriate to provide additional anatomic detail. Similarly, if there is concern for repeat intervention, preoperative imaging with CT/MR is indicated.

References

1. Chaikof EL, Dalman RL, Eskandari MK, et al. The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm .J Vasc Surg. 2018;67(1). doi:10.1016/j.jvs.2017.10.044.
2. Francois CJ, Skulborstad EP, Majdalany BS, et al. Expert Panels on Vascular Imaging and Interventional Radiology. ACR Appropriateness Criteria® Abdominal Aortic Aneurysm: Interventional Planning and Follow-Up. J Am Coll Radiol. 2018;15(5S):S2-S12. doi:10.1016/j.jacr.2018.03.008.
3. Hiratzka LF, Bakris GL, Beckman JA, et al. 2010 ACCF/AHA/AATS/ACR/ASA/SCA/SCAI/SIR/STS/SVM Guidelines for the diagnosis and management of patients with thoracic aortic disease. A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, American Association for Thoracic Surgery, American College of Radiology, American Stroke Association, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of Thoracic Surgeons, and Society for Vascular Medicine [published correction appears in J Am Coll Cardiol. 2013 Sep 10;62(11):1039-40]. J Am Coll Cardiol. 2010;55(14):e27-e129. doi:10.1016/j.jacc.2010.02.015.

4. Smith T, Quencer KB. Best Practice Guidelines: Imaging Surveillance After Endovascular Aneurysm Repair. American Journal of Roentgenology. 2020;214(5):1165-1174. doi:10.2214/ajr.19.22197.
5. Zierler RE, Jordan WD, Lal BK, et al. The Society for Vascular Surgery practice guidelines on follow-up after vascular surgery arterial procedures. J Vasc Surg . 2018;68(1):256-284. doi:10.1016/j.jvs.2018.04.01
6. Bonci G, Steigner ML, et al. ACR Appropriateness Criteria® Thoracic Aorta Interventional Planning and FollowUp. J Am Coll Radiol. 2017;14(11S):S570-S583. doi:10.1016/j.jacr.2017.08.042.
7. Kalva SP, Dill KE, et al. ACR Appropriateness Criteria® nontraumatic aortic disease. J Thorac Imaging. 2014;29(5):W85-W88. doi:10.1097/RTI.000000000000107.