ACR Appropriateness Criteria® Thoracic Aorta Interventional Planning and Follow-Up

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Abstract

Thoracic endovascular aortic repair (TEVAR) has undergone rapid evolution and is now applied to a range of aortic pathologies. Imaging plays a vital role in the pre- and postintervention assessment of TEVAR patients. Accurate characterization of pathology and evaluation for high-risk anatomic features are necessary in the planning phase, and careful assessment for graft stability, aortic lumen diameter, and presence of endoleak are paramount in the follow-up period. CTA is the imaging modality of choice for pre- and postintervention assessment, and MRA is an acceptable alternative depending on patient stability and graft composition. Lifelong imaging follow-up is necessary in TEVAR patients because endoleaks may develop at any time. The exact surveillance interval is unclear and may be procedure and patient specific.

The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed annually by a multidisciplinary expert panel. The guideline development and revision include an extensive analysis of current medical literature from peer reviewed journals and the application of well-established methodologies (RAND/UCLA Appropriateness Method and Grading of Recommendations Assessment, Development, and Evaluation or GRADE) to rate the appropriateness of imaging and treatment procedures for specific clinical scenarios. In those instances where evidence is lacking or equivocal, expert opinion may supplement the available evidence to recommend imaging or treatment.

Key Words: Acute aortic syndrome, Aneurysm, Appropriateness Criteria, Appropriate Use Criteria, AUC, CTA, Endoleak, Endovascular repair, MRA

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Variant 1. Planning for pre–thoracic endovascular repair (TEVAR) of thoracic aorta disease.

Radiologic Procedure	Rating	Comments	RRL
CTA chest abdomen pelvis with IV contrast	9	See references [10,11,24-26,38-54,56-58].	☢☢☢☢☢
CTA chest with IV contrast	7	This procedure is appropriate if pathology is contained to the thoracic aorta. See references [10,11,24-26,38-54,56-58].	☢☢☢
MRA chest abdomen pelvis with IV contrast	7	See references [10,36,39,60,61].	○
MRA chest with IV contrast	7	This procedure is appropriate if pathology is contained to the thoracic aorta. See references [10,36,39,60,61].	○
MRA chest abdomen pelvis without IV contrast	6	Use this procedure if contrast is contraindicated. See references [36,39,60].	○
MRA chest without IV contrast	6	This procedure is appropriate if pathology is contained to the thoracic aorta and if contrast is contraindicated. See references [36,39,60].	○
US duplex Doppler iliofemoral arteries	5	This procedure may be appropriate as an adjunctive for preoperative access site planning. See references [56,68].	○
Aortography chest abdomen pelvis	5	This procedure may be appropriate for diagnostic purposes when urgent intervention is required. See references [45,56,61,64].	☢☢☢☢
US echocardiography transesophageal	5	This procedure is useful as an adjunctive study or for urgent/intraoperative evaluation but does not provide complete evaluation of the thoracic aorta and its branch vessels. See references [54,59,61,65,66].	○
CT chest abdomen pelvis without IV contrast	4	This procedure may have utility in cases of suspected intramural hematoma, in situations where patients cannot receive iodinated contrast, and/or where MRI is contraindicated. See references [10,11,24-26,38-54,56-58].	☢☢☢☢
CT chest without IV contrast	4	This procedure may have utility in cases of suspected intramural hematoma, in situations where patients cannot receive iodinated contrast, and/or where MRI is contraindicated. See references [10,11,24-26,38-54,56-58].	☢☢☢
US echocardiography transthoracic resting	4	See references [54,59,61,65,66].	○
US intravascular aorta	4	This procedure may be useful as an adjunctive intraprocedural technique. See reference [67].	○
CT chest abdomen pelvis without and with IV contrast	3	See references [2-14,33,34,61,71-83].	☢☢☢☢
CT chest abdomen pelvis with IV contrast	3	CTA is the preferred examination. See references [2-14,33,34,61,71-83].	☢☢☢☢
CT chest without and with IV contrast	3	Use this procedure if contrast can be given. CTA is the preferred examination (CTA can include a noncontrast phase as per the ACR definition).	☢☢☢
CT chest with IV contrast	3	Use this procedure if contrast can be given. CTA is the preferred examination.	☢☢☢
FDG-PET/CT chest abdomen pelvis	3	See reference [70].	☢☢☢☢
X-ray chest	2	See references [59,69].	☢

Note: Rating scale: 1, 2, 3 = usually not appropriate; 4, 5, 6 = may be appropriate; 7, 8, 9 = usually appropriate. CTA = CT angiography; FDG-PET = positron emission tomography using fluorine-18-2-fluoro-2-deoxy-D-glucose; IV = intravenous; MRA = MR angiography; RRL = relative radiation level; US = ultrasound.