

CMS Summary for Arteriovenous Malformations (AVM) Imaging

Guideline: PVD 9.1

Arteriovenous malformations are malformed vascular mass with a high flow velocity formed by a direct artery-vein connection within the arteriovenous system. In general, these are a congenital disease and some may spontaneously resolve in childhood. They can exhibit accelerated growth during puberty or pregnancy. Complications of AVMs include cutaneous and mucosal ischemic ulcers, acute bleeding and even congestive heart failure in large AVMs with high flow.

Duplex ultrasound is preferred imaging for screening for subcutaneous AVMs and initial evaluation of suspected superficial AVMs. Duplex ultrasound evaluation includes size and appearance of mass and assessment of the hemodynamic flow within the AVM and feeding vessels.

Contrast enhanced CT scan or MRI is indicated for AVMs that are unable to be fully assessed by duplex ultrasound due to size or anatomic location, preoperative planning for embolization or resection or in cases where the diagnosis of AVM may be uncertain on physical exam or duplex ultrasound. Digital Subtraction Angiography (DSA) is the gold standard for assessment of AVMs but is invasive and usually reserved for uncertain cases of possible malignant mass or performed concurrently with embolization therapy.

Imaging for surveillance of small, quiescent AVMs without plan for intervention may be indicated on a yearly basis using duplex ultrasound or CT/MRI based on size and location. For symptomatic AVMs, imaging may be indicated for a change in size, symptoms or initial/ recurrent treatment planning.

Post embolization imaging of AVMs is indicated after the final treatment to assess success of treatment. Additional imaging may be indicated for recurrent symptoms, change in appearance of the AVM and recurrent treatment planning.

References

1. Shen Y, Su L, Wang D, Fan X. Overview of peripheral arteriovenous malformations: From diagnosis to treatment methods. *J Interv Med*. 2023 Oct 29;6(4):170-175. doi: 10.1016/j.jimed.2023.10.006. PMID: 38312130; PMCID: PMC10831390.