

Arteriovenous Malformations, or AVMs, can be a life-threatening neurological disease. About 1% of general population have an arteriovenous malformation. They are slightly more common in males, young people-- including children. My name is Dr. Leonardo Rangel Castilla, and I'm an Assistant Professor of Neurological Surgery and Radiology at the Mayo Clinic in Rochester. My specialty and focus is vascular brain disease, including cerebral aneurysms, arteriovenous malformations, stroke, among others.

An arteriovenous malformation is a tangle of abnormal vessels and can occur anywhere in the brain and the spinal cord. Brain arteriovenous malformations are of a special concern because of the damage that they could cause when they bleed. The bleed rate is about 4% per year and increases over time. AVMs could cause headaches, loss of language or motor function, seizures, coma, and occasionally, death.

Today, arteriovenous malformations can be safely treated, ideally in a multidisciplinary neurovascular center with appropriate neurology, neurosurgery, and interventional radiology experts. There are three different modalities of treatment that include endovascular embolization, surgery, and radiation. Here at Mayo Clinic, we have a state of the art facility and offer a state of the art treatment and technology through a team of experts.

Usually, the treatment of arteriovenous malformation includes a combination of embolization, microsurgery, or radiation. My job as a vascular neurosurgeon is to select the best, most durable, and less risk treatment for a particular patient and a particular arteriovenous malformation. I take in consideration multiple factors, including age, overall patient's health, size, location, and morphology of the malformation, and work closely with a team of experts available to decide the best individualized treatment plan for that patient.

Surgery involves minimally invasive brain surgery with the help of a high-powered microscope and microinstruments. We perform delicate and very precise microsurgery until the malformation is completely removed. Usually, patients are discharged home two or three days after the surgery. We also offer endovascular embolization. In this procedure, we insert a catheter or a microcatheter through the leg or through the arm artery into the blood vessels going into the arteriovenous malformation using X-ray imaging.

The microcatheter is then positioned very closely to the arteriovenous malformation. We then inject embolizing agents, such as glue. The goal of this procedure is to reduce the amount of blood flow going into the malformation in preparation for surgery or radiation. The procedure can be done under conscious sedation without the need of general anesthesia, allowing for a faster recovery.

Radiosurgery or radiation therapy is another modality in the treatment of arteriovenous malformations using very precise, focused radiation beams to the malformation. The radiation will then slowly clot off the AVM in about one to three years after treatment. This modality is only used for those malformations that are located in very deep areas of the brain difficult to access with surgery.

For me to use my mental and medical skills combined with compassion and empathy together to help patients with this devastating neurological disease, such as arteriovenous malformation, is a privilege. At Mayo Clinic, we treat more than 8,000 patients each year with stroke and other rare and complex [INAUDIBLE] vascular disorders. Vascular neurosurgeons, including myself, perform more than a thousand procedures for these same conditions each year, including vascular malformations.

For more information about brain AVMs or to request an appointment, please visit [MayoClinic.org/BrainAVM](https://www.mayoclinic.org/BrainAVM). Thank you for your time.