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NSPC™
Brain & Spine Surgery

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BRAIN ARTERIOVENOUS MALFORMATIONS (AVM'S)

THE CONDITION

Brain AVM's are abnormal tangles of blood vessels in the brain that are usually thought to be present since birth. They can bleed, which can lead to serious consequences. They can also cause seizures. They bleed at a rate of about 3% per year and about half of these will lead to serious consequences. For the first year after a bleed, the bleed rate increases to about 6%. AVM's can vary in size, location, and presentation. Very large AVM's are usually just observed.

TREATMENT OPTIONS

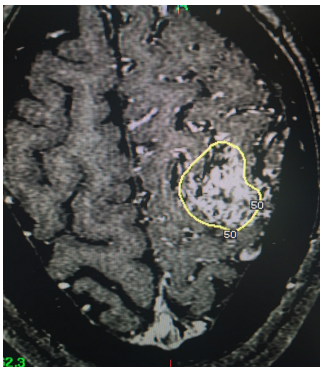
Surgery is best considered for AVM's that have bled, and are small and located in a superficial and non-eloquent location in the brain. Immediately prior to surgery, the AVM is usually "embolized." This means that during an angiogram (a picture of the arteries taken with a catheter threaded up from the artery in the groin) material is injected into the AVM to reduce its blood supply to make the surgery safer. Very small AVM's that have bled may be completely obliterated with embolization.

For most AVM's, radiosurgery is the procedure of choice. The focused radiation causes the abnormal blood vessels to clot off ("thrombose") over time, usually 2-4 years. Once the vessels are fully thrombosed, there is no longer a risk of bleeding. Sometimes, if the entire AVM has not resolved after one radiosurgery treatment, another treatment can be performed, years later, on the residual blood vessels. Three illustrative cases treated by Dr. Michal Brisman are described below.

CASE STUDY 1

This is a 13-year-old girl who was experiencing right arm and leg tingling episodes and headaches, found to have a moderate sized left front AVM. Gamma Knife (a type of radiosurgery) was performed. An MRI done six years later shows complete resolution of the AVM. Her symptoms have all resolved.

AT TREATMENT



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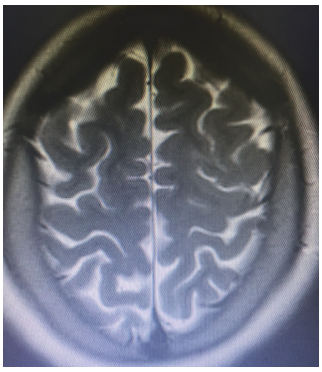
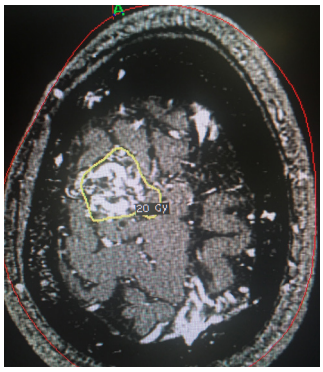


CASE STUDY 2

This is a 28-year-old man who presented with headaches, found to have a 2.5cm right frontal AVM. Gamma Knife (a type of radiosurgery) was performed. Three years later, the AVM is gone and he has no symptoms.

AT TREATMENT



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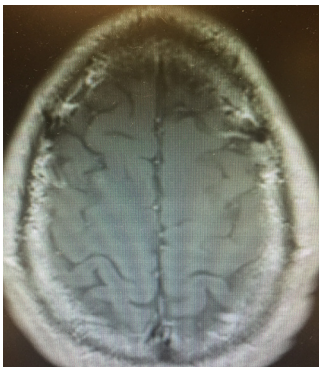

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CASE STUDY 3

POSTERIOR FOSSA BRAIN AVM – 19-YEAR FOLLOW-UP

A 40-year-old woman who was 5 months pregnant, presented to the emergency room with a sudden onset of a bad headache. CT and MRI of the head showed a small bleed from a posterior fossa arteriovenous malformation (AVM) in the superior portion of the cerebellar vermis. After a few days, she felt better and was discharged. Several months later she completed her pregnancy with a healthy delivery.

Subsequent to this, she underwent Gamma Knife treatment of the cerebellar AVM (See Figure 1). She had no subsequent problems. Subsequent imaging showed that the AVM was starting to thrombose. She was then lost to follow up for many years.

She returned for a follow up visit 19 years after the Gamma Knife treatment just to check up on things. She felt well and was neurologically intact. MRI and CTA of the brain were performed, which demonstrated complete obliteration of the AVM (See Figures 2A, 2B and 2C).

Discussion: Very small Brain AVM's can be obliterated with embolization. Surgery can be considered in small superficial AVM's that have bled, that occur in young, healthy patients, are in non-eloquent brain, and can be well embolized before the surgery. Most Brain AVM's are best treated with a one day, out-patient treatment with Gamma Knife.

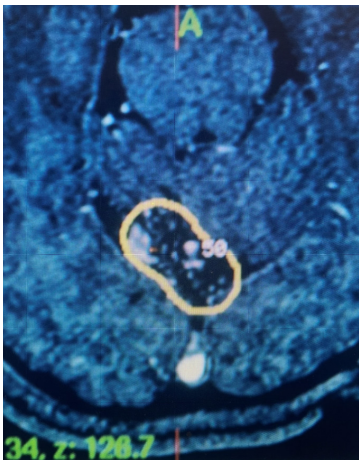

FIGURE 1
Axial MRI with contrast at the time of Gamma Knife treatment showing the tightly conformal 50% Isodose line contoured around the AVM of the posterior superor cerebellar vermis.

FIGURE 2A
Axial MRI image with contrast.

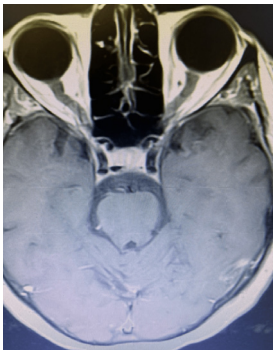

FIGURE 2B
Axial T2 MRI image.

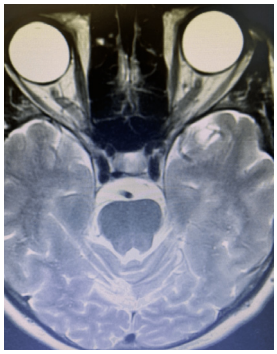

FIGURE 2C
Axial CTA image.

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Board certified by the American Board of Neurological Surgeons and a Fellow of the American College of Surgeons, Dr. Brisman specializes in the treatment of Trigeminal Neuralgia and Brain Tumors. He serves as the Co-Medical Director of the Long Island Gamma Knife ® Center at Mount Sinai South Nassau and he has served as the Chief of Neurosurgery and Co-Director of the Neuroscience Institute at NYU Winthrop Hospital. In addition, Dr. Brisman has formerly served as President of both the Nassau County Medical Society and the New York State Neurosurgical Society.

Dr. Brisman Treats:
- Trigeminal Neuralgia
- Glossopharyngeal Neuralgia
- Meningiomas
- Brain Tumors
- Brain Metastases
- Skull Tumors
- Pituitary Tumors
- Gliomas
- Brain AVM's
- Acoustic Neuromas
- Hemifacial Spasm
- Chiari Malformation

Dr. Brisman is proficient in the use of minimally invasive neurosurgical procedures, including:
- Stereotactic Radiosurgery
- Neuro-endoscopy
- Gamma Knife ®
- Transsphenoidal Endoscopic Surgery
- CyberKnife ®
- Novalis Tx ®
- Stereotactic-guided Craniotomy
- Percutaneous Trigeminal Rhizotomy
- Microvascular Decompression (MVD)