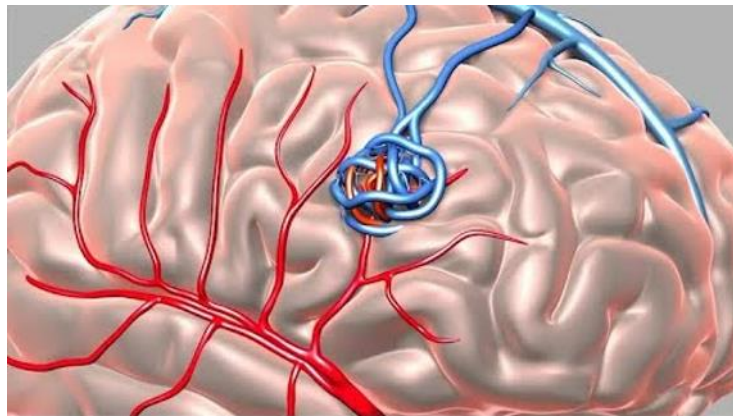


Arteriovenous Malformation (AVM) and Gamma Knife Treatments

This information will help prepare you and your caregiver for your treatment.



What is an Arteriovenous Malformation?

An arteriovenous malformation, also known as an AVM, is a tangle of abnormal blood vessels that connects arteries directly to the veins in the brain. An AVM can develop anywhere in the body but occurs most often in the brain or spine (*Germans et al. 2021*).

What is Gamma Knife?

Gamma Knife is a specialized machine which delivers a treatment known as radiosurgery or stereotactic radiosurgery (GK SRS). A total of 192 pinpoint beams focus on the target with maximal sparing of healthy, adjacent brain. This type of radiation typically takes 2 – 3 years on average to obliterate the AVM. Until the AVM is closed off the risk of bleeding still persists.

The goal of GK SRS is for your AVM to be obliterated, reducing the risk of bleeding or hemorrhaging from the AVM.

Gamma Knife attempts to spare normal brain in hopes of limiting the risk of injury surrounding healthy tissue (*Medical Advisory Secretariat, 2002*).

The Gamma Knife Head Frame

The Gamma Knife head frame is placed on the day of the procedure with the assistance of the neurosurgical team. The frame is secured using four pins – two in the forehead and two at the same level in the back of the head. Prior to placement of the pins, a sedative is given in your IV and the pin sites will receive local anesthetic to minimize pain. The entire process takes approximately 30 minutes.

After frame placement you will be taken to MRI for a high-resolution image. Following this, you will proceed to the angiography suite after which you will return to the Gamma Knife suite for your treatment. The frame is in place during the entire process as it serves two purposes: 1) To create a coordinate system within the brain to allow for treatment planning, and 2) To prevent movement of your head during the treatment by attaching to the table during the radiation (*Medical Advisory Secretariat, 2002*).



The Night Before Treatment

DO NOT eat or drink anything after midnight the evening before your procedure. You can take your morning medications with a sip of water the morning of your treatment. Please hold diabetic medication and anticoagulation if applicable. Bring a list of your medications with you.

It is recommended to wash your scalp the night before receiving Gamma Knife treatment. Be sure to wear your hair loose; **DO NOT** wear any clips, pins, or hair ties. **Your hair will not be shaved.**

Treatment Day

We ask that you arrive 15 minutes prior to your scheduled arrival time. It is important to wear slip-on shoes and comfortable attire.

On your treatment day, your schedule of events will look like the following:

- You will check in at the front desk at Clements University Hospital (CUH).
- The registered nurse (RN) will meet you and perform an assessment and prep you for your procedure.
- The Neurosurgery team will arrive for placement of the head frame.
- You will be taken to MRI for up-to-date imaging and will then proceed to the angiography suite where the procedure will take approximately 1.5 – 2 hours.
- Following the procedure you will be taken to the post-operative care unit (PACU) for one hour to recover.
- You will then be brought down to the Gamma Knife suite for treatment.
- Once treatment has been completed the head frame will be removed and you will be provided with post-procedure handout materials and discharged home.

Post-Treatment Instructions

- Dressing (if present) may be removed the morning after the procedure.
- No driving, strenuous activity, or heavy lifting over 10 pounds for 24 hours.
- **DO NOT** take a very hot bath or shower for 24 hours.
- Resume your normal diet post-treatment; drink plenty of fluids.

- You may be groggy the rest of the day if you received sedatives during the test. **DO NOT** drive.
- Minor pain, swelling, and discoloration may occur at the puncture site and remain for several days.
- Any further concerns should be reported.
- If prescription is given, have all prescriptions filled and take as directed on label.
- See attached medication listing on **Patient Discharge Summary Instructions Sheet**.

Possible Side Effects After Treatment

Side effects are highly dependent on size and location of the AVM. AVMs are usually treated in a single fraction. However, large AVMs may require multiple treatments. Side effects can include:

- Swelling of the brain
- Headache
- Nausea or vomiting
- Fatigue
- Memory loss
- Hair loss
- Numbness/tingling sensation on the scalp
- Seizures
- Bleeding in the brain

Contact Us

Observe the puncture site or groin area where the catheter was inserted. If bleeding or swelling is noted, hold pressure over the site and call your physician or 911 immediately. Also note any changes in the color or temperature of your leg or foot. For any questions or concerns, please reach out to the radiation oncology clinic on MyChart or call **214-645-8525**.