2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

CASE

The arterial supply of a VGAM usually involves all of the **choroidal arteries, including anterior choroidal contributions**

It may also receive significant contributions from the **subependymal network originating from the posterior circle of Willis.**

These arteries should be differentiated from transmesencephalic ones, because the involvement of the latter excludes the diagnosis of VGAM and indicates a tectal and not a choroidal AVM.

The subependymal arteries pierce the floor of the third ventricle and run under the ependyma to join the choroid fissure, where they contribute to the blood supply of the lesion.

Subependymal and thalamo-perforating contributions supply the shunt as accessories that are recruited by the sump effect of the venous drainage, and they usually disappear following proper occlusion of the most prominent shunts.

Cerebellar arteries do not supply a VGAM except indirectly through their dural branches, which can be enlarged because they may participate in the supply to the v**asa vasorum at the veno-dural junction**.

A **VGAM is a choroidal type of AVM.**

The lesion is supplied by the **choroidal arteries.**

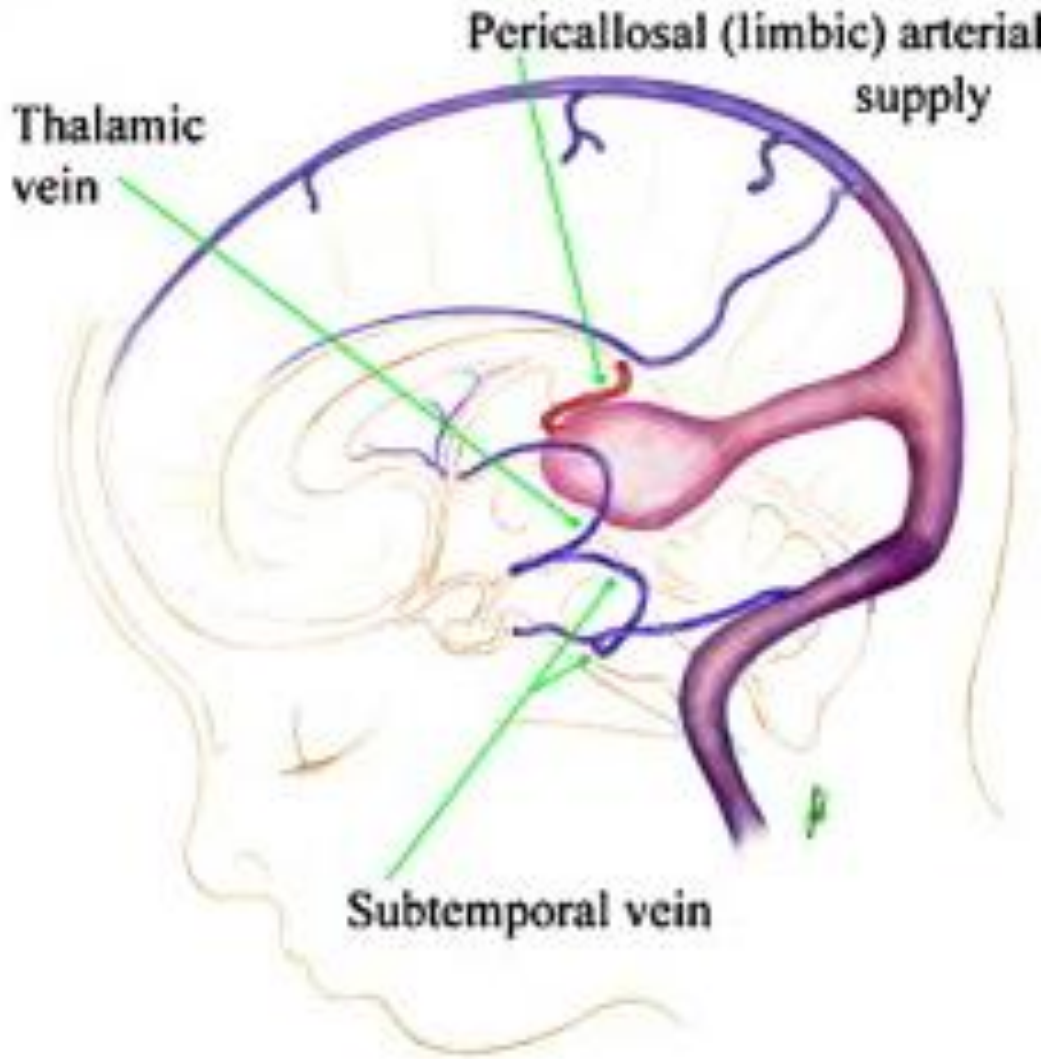
The choroidal shunt drains into a dilated vein, which Raybaud and colleagues first recognized as an ectatic vein, which is the **median vein of the prosencephalon, the embryonic precursor of the vein of Galen.**

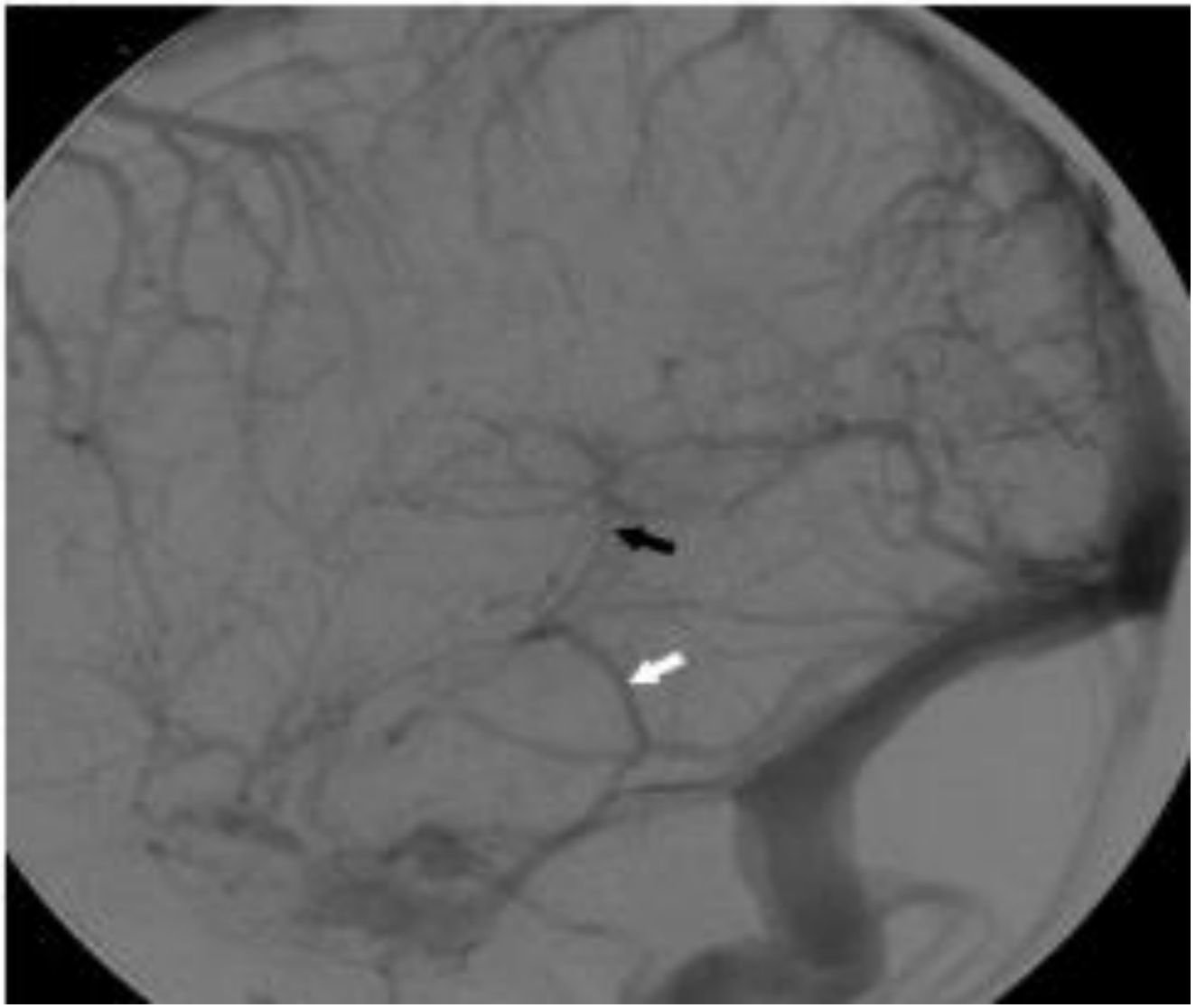
This **embryonic vein drains only the choroidal system and does not connect with the deep venous system.** It does not become the vein of Galen until communications with the thalamostriate and internal cerebral veins develop.

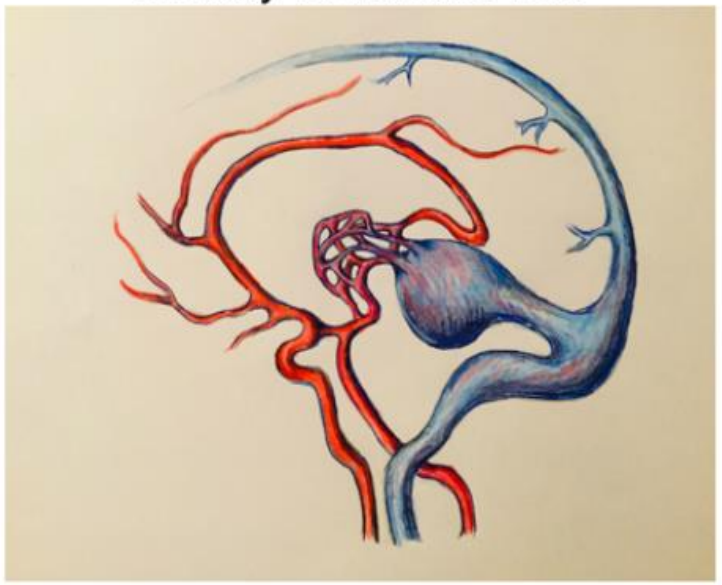
In patients with VGAMs, these latter communications do not form, and the **thalamostriate veins drain into the posterior and inferior thalamic (diencephalic) veins and secondarily join the anterior confluence, a subtemporal vein, or (more often) the lateral mesencephalic vein to open into the superior petrosal sinuses, which demonstrate a typical epsilon shape ("epsilon vein") on the lateral angiogram .**

Persistence of this venous arrangement is identical to that seen early in life before the 12th week of gestation.

This pattern allows one to establish the time at which the malformation developed, and one may consider a VGAM to be the result of an error in the early phase of vasculogenesis.


Pericallosal (limbic) arterial supply
Thalamic vein
Subtemporal vein



	VGAM MURAL	VGAM CHOROIDAL
AGE OF PRESENTATION	Later / infant	Earlier/ neonate
ANGIOARCHITECTURE	Direct AV fistulas within the wall of prosencephalic median vein Unifocal or multifocal Usually in lateral wall 	Mimics AVM: choroidal + deepbrain arteries create a network before VG Usually in anterior wall 
PROGNOSIS	Better, well tolerated	Worse, severe AVS leads to cardiac failure