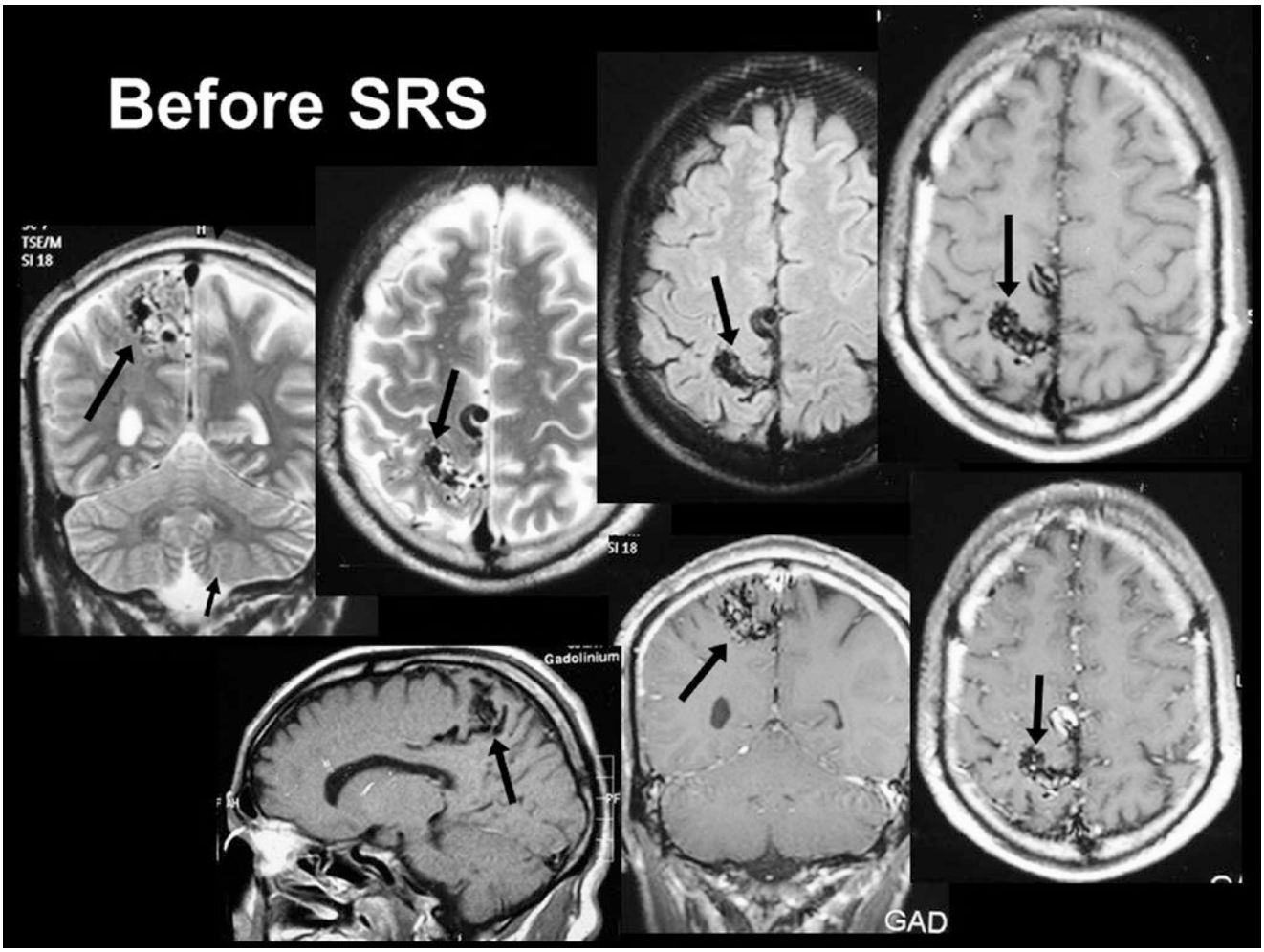
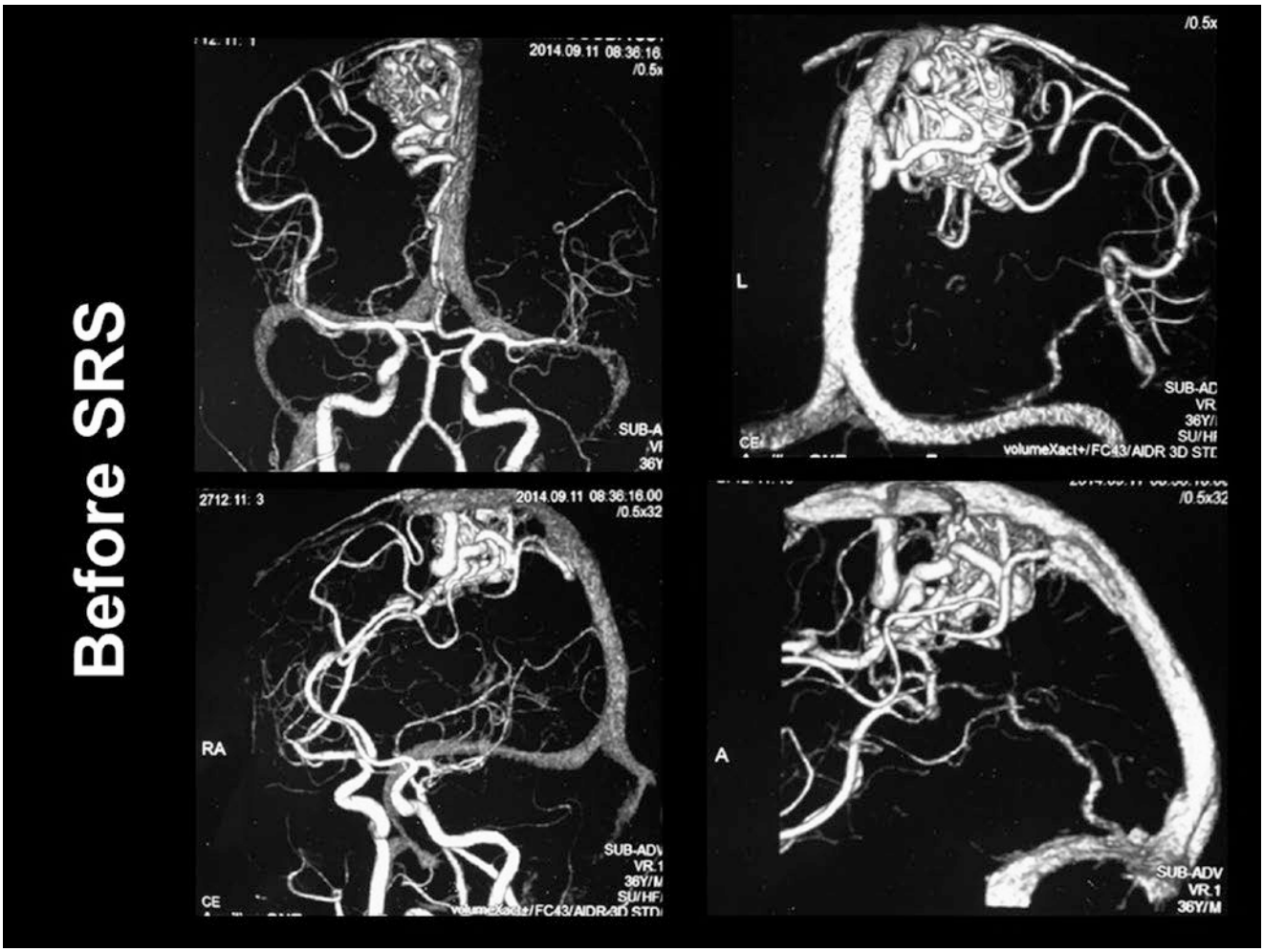
Rolandic Arteriovenous Malformation (AVM)

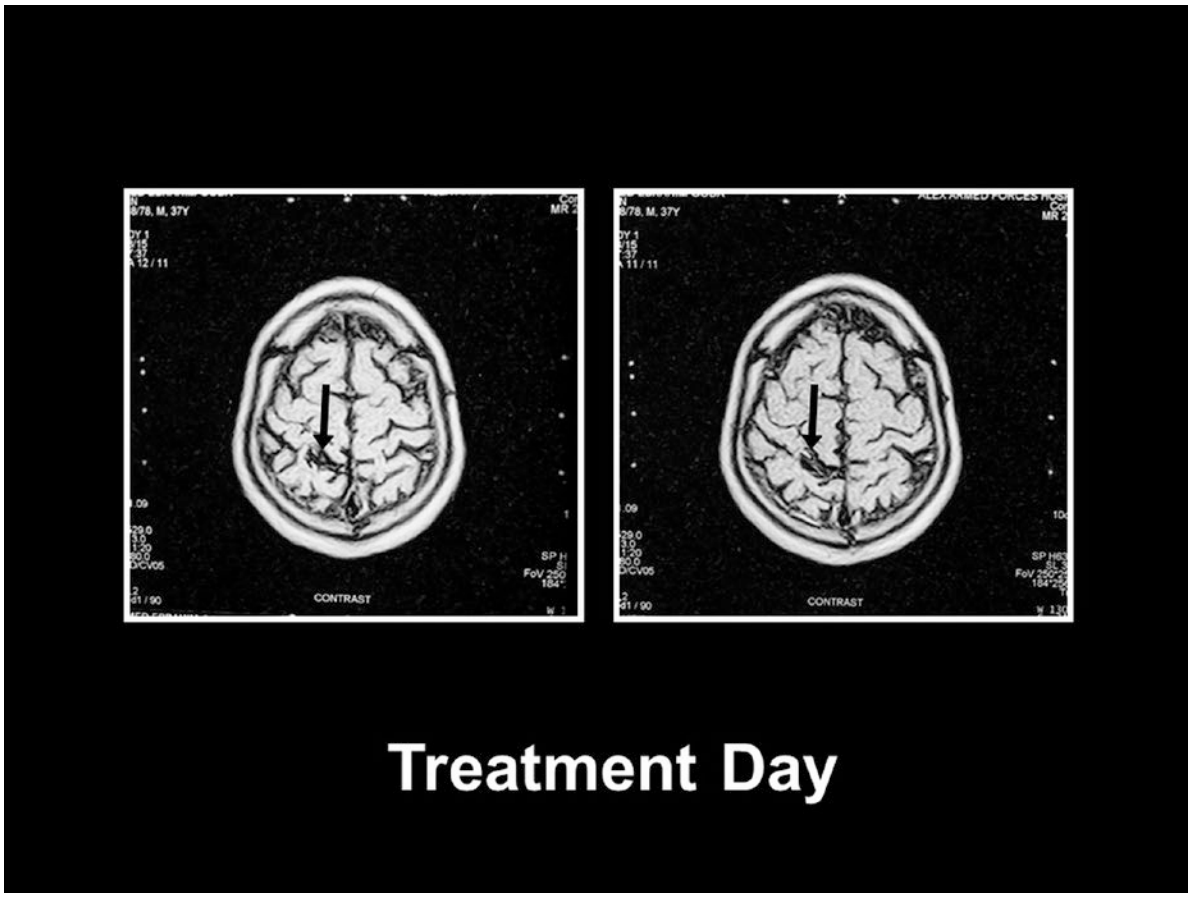
4

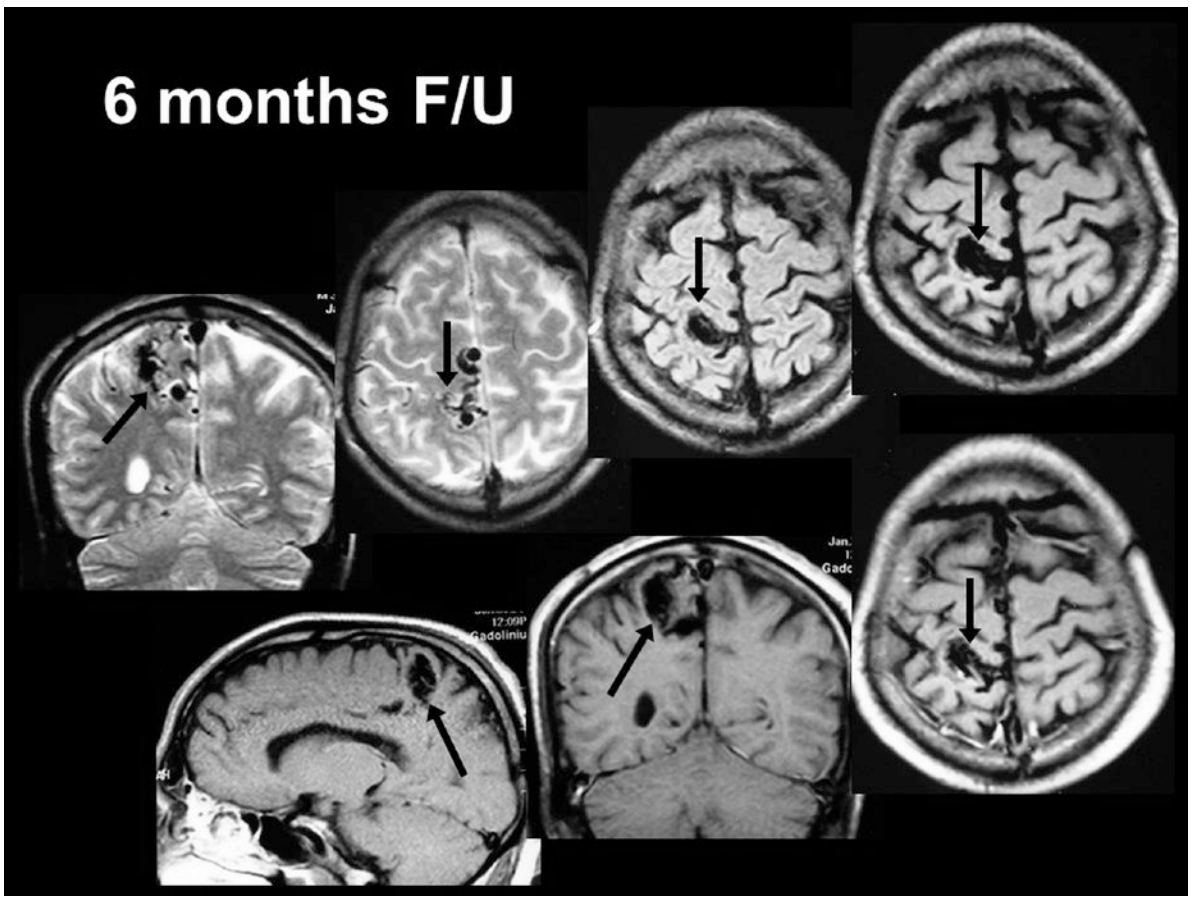
- **Demographics:** Male; 37 years
- **Initial Presentation:** Chronic headache
- **Diagnosis:** Rolandic AVM
- **Pre-radiosurgery Treatment:** None
- **Pre-radiosurgery Presentation:** Chronic headache
- **Radiosurgery Treatment:**
  Upfront (primary); Linac-based SRS for right, rolandic (motor cortex) AVM
- **Radiosurgery Dosimetry:**
  - Target volume: 6.3 cc
  - Marginal dose: 15.0 Gy
  - Marginal isodose: 75%
  - Maximum dose: 20.6 Gy
  - Minimum dose: 13.5 Gy
  - Average dose: 18.9 Gy
  - Number of isocenters: 1
- **Follow-Up Period:** 62 months post-SRS
- **Clinical Outcome:**
  - 6 months post-SRS: Persistence of annoying attaches of headache
  - 24 months post-SRS: Slightly improving headaches with medications
  - 60 months post-SRS: Persistence of mild attaches of headache
- **Complications:** None
- **Radiological Outcome:**
  - 6 months post-SRS (MRI): Stationary size of AVM nidus
  - 12 months post-SRS (MRI): Stationary size of AVM nidus
  - 24 months post-SRS (MRI):
    Stationary size of AVM nidus
    Appearance of perinidal high signal in T2 and FLAIR studies, denoting vasogenic edema
  - 36 months post-SRS (MRI):
    Stationary size of AVM nidus
    Increased perinidal high signal in T2 and FLAIR studies
    Appearance of perinidal focal encephalomalacia showing heterogeneous enhancement in T1 Gadolinium-enhanced study
  - 60 months post-SRS (MRI):
    Slight decrease in size of AVM nidus
    Persistent increased perinidal high signal in T2 and FLAIR studies
    Persistence of perinidal heterogeneously enhancing focal encephalomalacia in T1 Gadolinium-enhanced study
  - 61 months post-SRS (CT):
    Persistence of perinidal heterogeneously enhancing focal encephalomalacia in contrast-enhanced study
  - 62 months post-SRS (CTA): Residual smaller AVM nidus
- **Post-radiosurgery Treatment:** Watchful waiting for delayed complete obliteration of the residual AVM nidus during an extended follow-up period before deciding repeat radiosurgery treatment

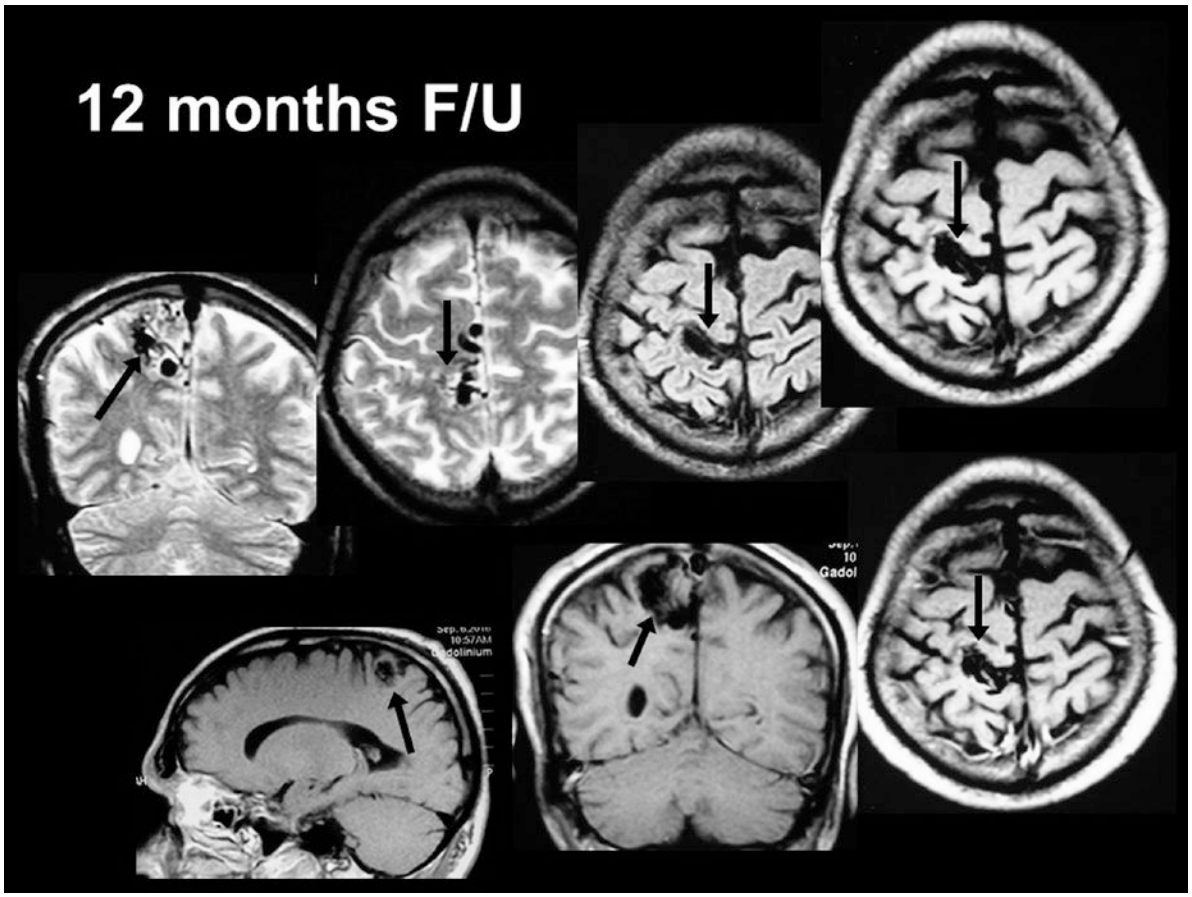
O. S. Abdelaziz, A. A. F. De Salles, *NeuroRadiosurgery: Case Review Atlas*, https://doi.org/10.1007/978-3-031-16199-5_4

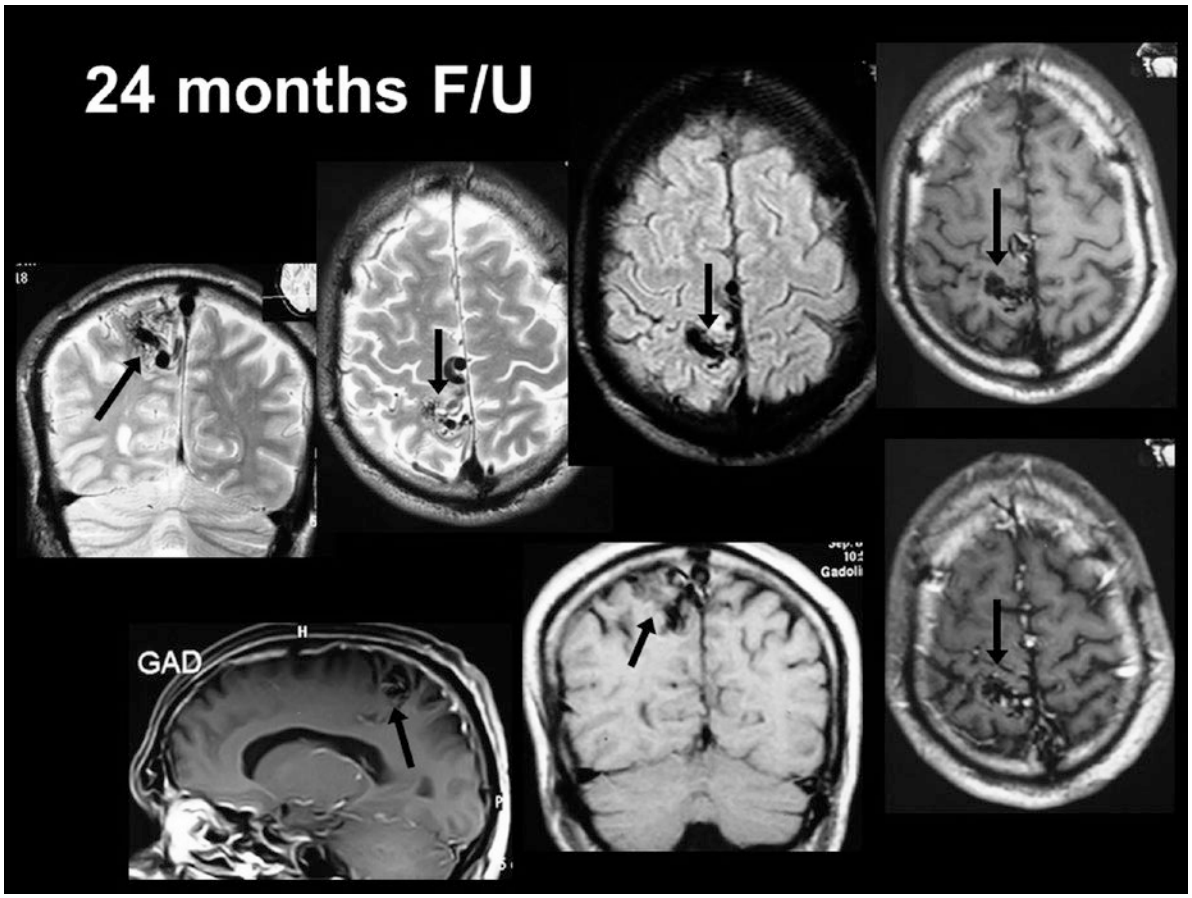

Before SRS
TSE/M
SI 18
SI 18
Gadolinium
GAD

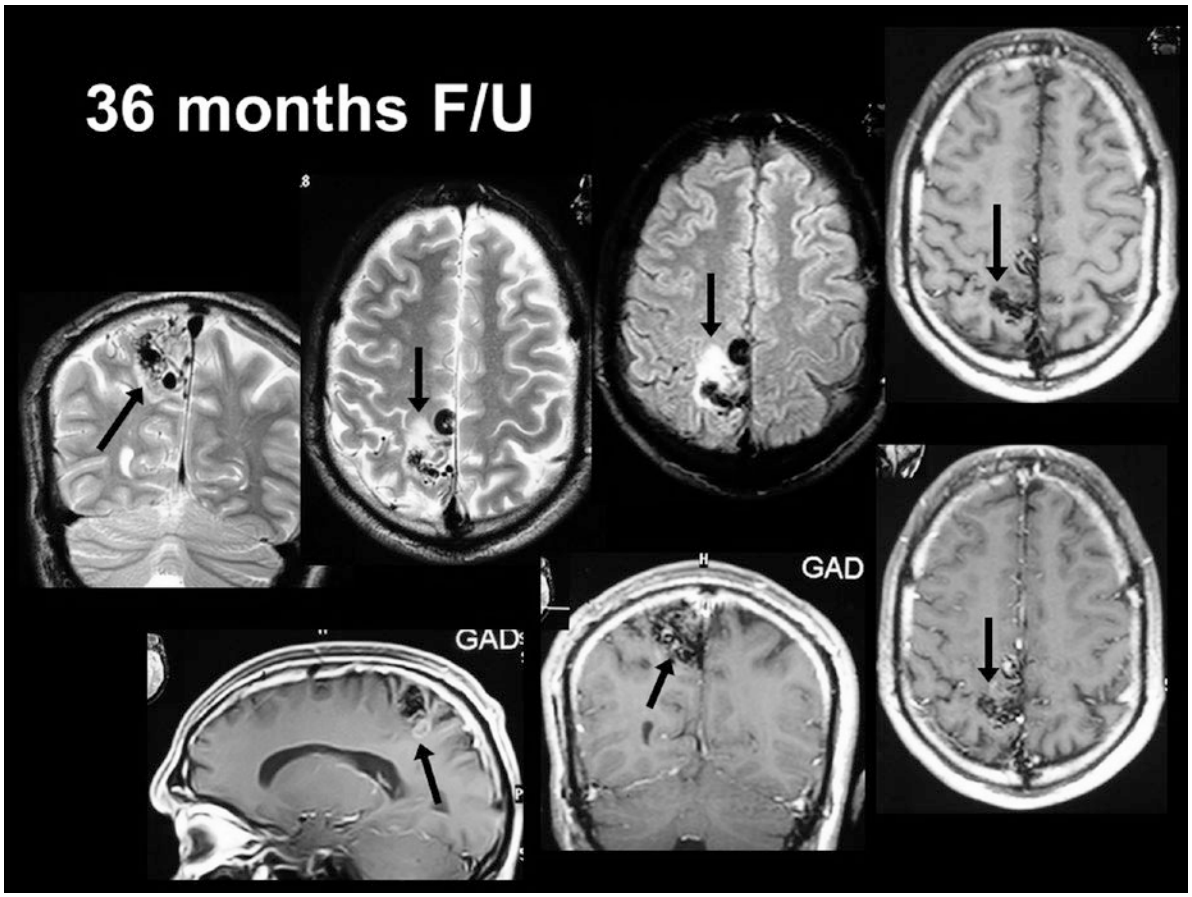

Before SRS
2014.09.11 08:36:16
/0.5x
/0.5x
L
SUB-AD
VR
36Y/
SU/HI
volumeXact+/FC43/AIDR 3D STD
2712.11: 3
2014.09.11 08:36:16.00
/0.5x32
RA
SUB-ADV
VR.1
36Y/M
CE
/0.5x32
A
SUB-ADV
VR.1
36Y/M

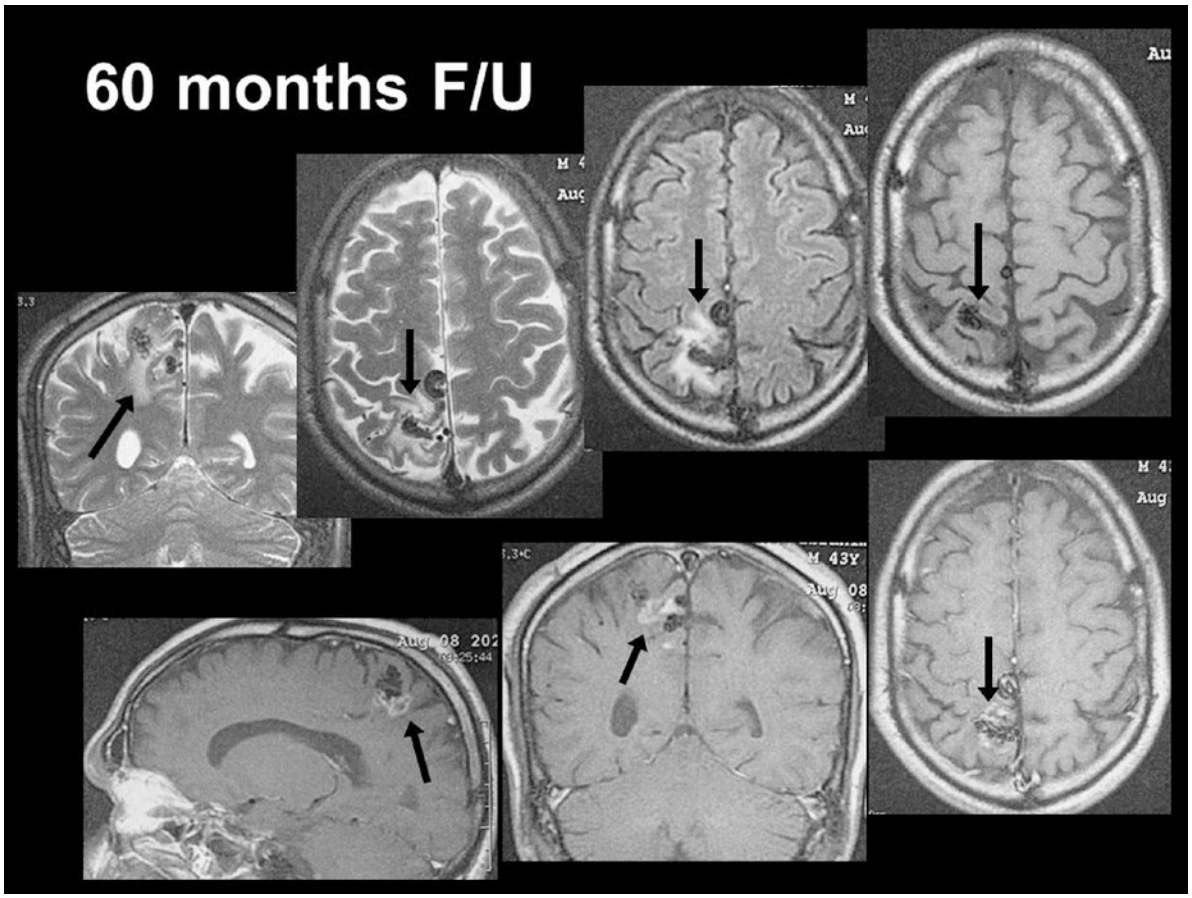

CONTRAST
CONTRAST
Treatment Day

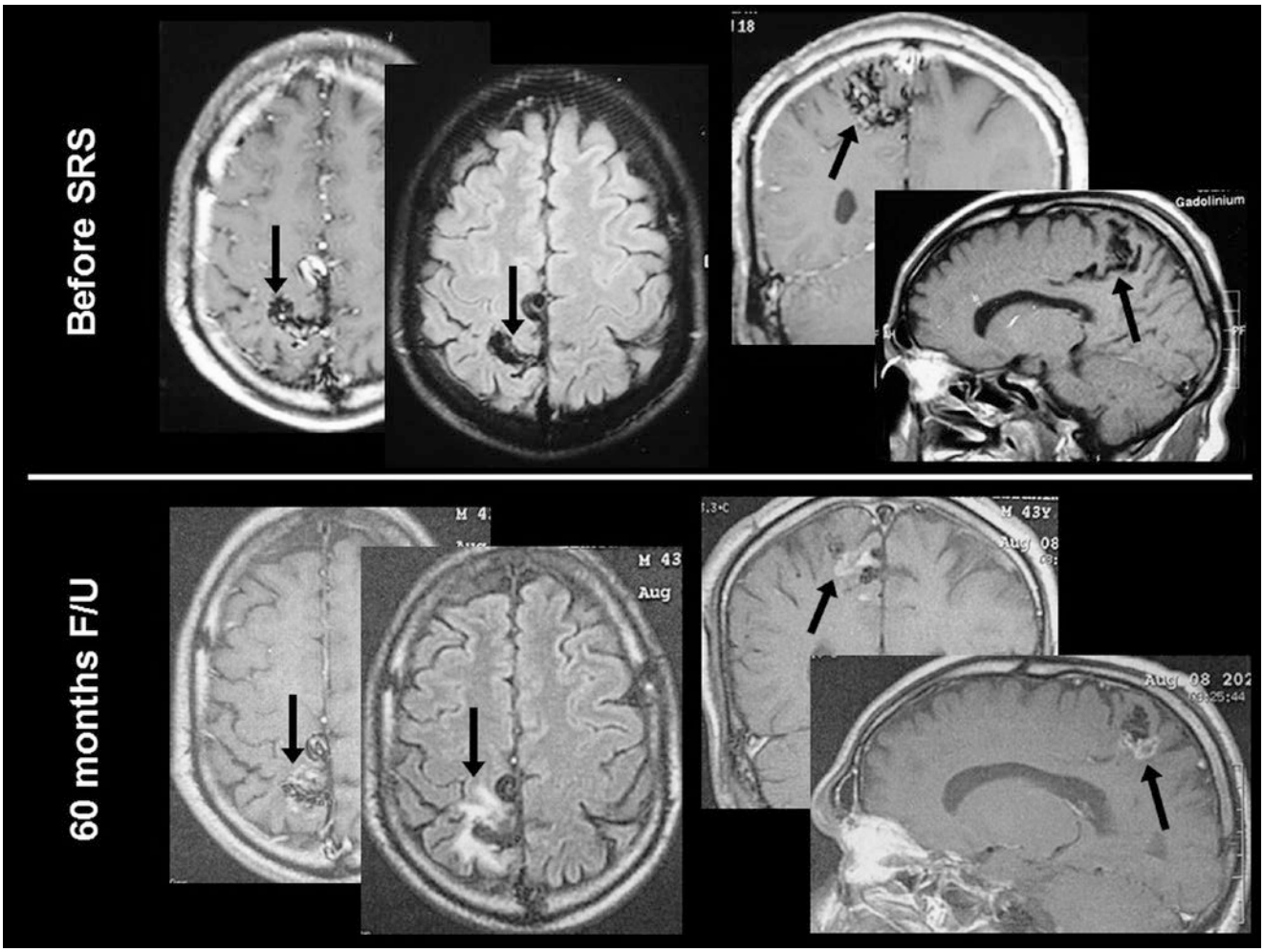

6 months F/U

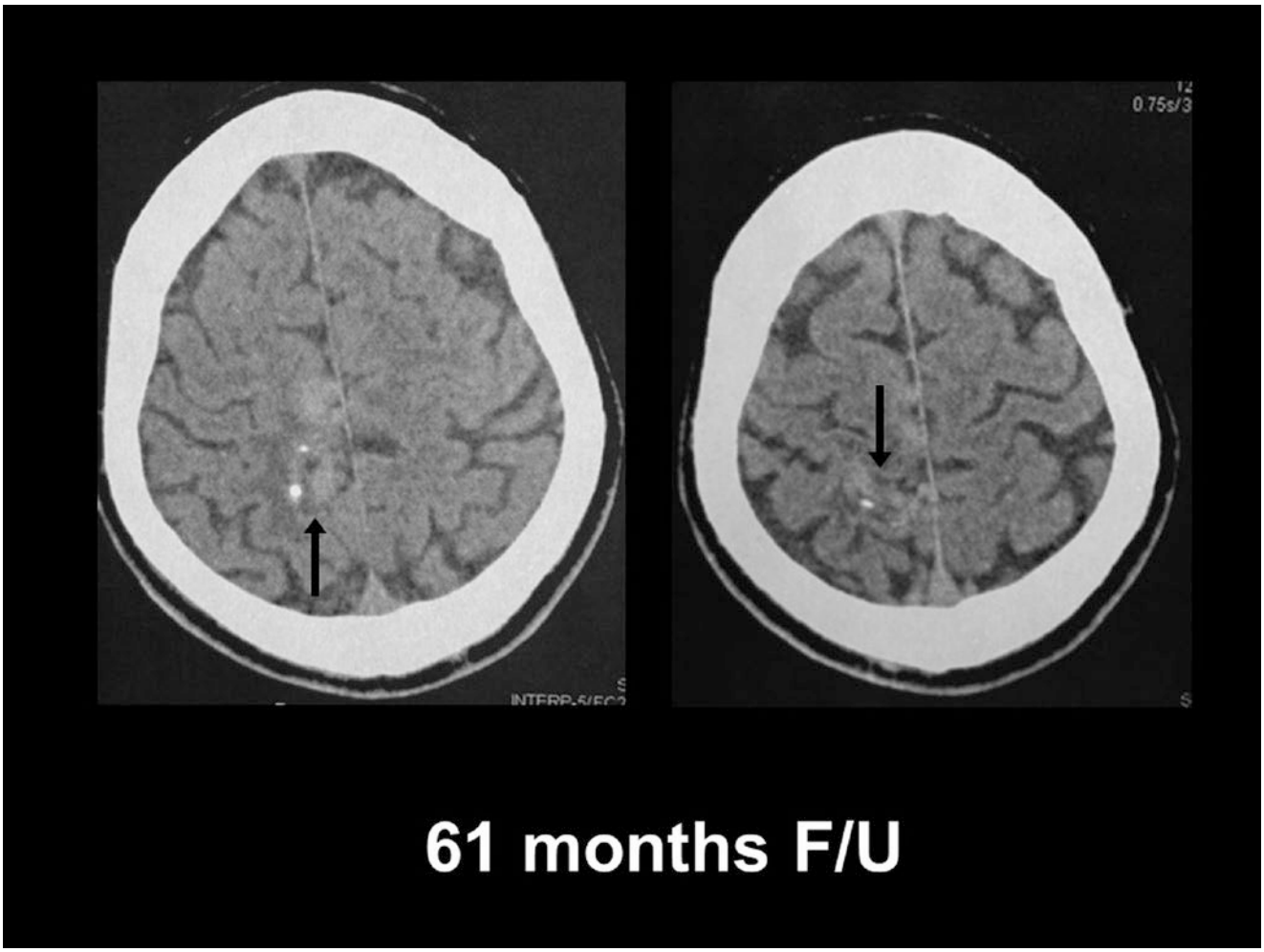

12 months F/U

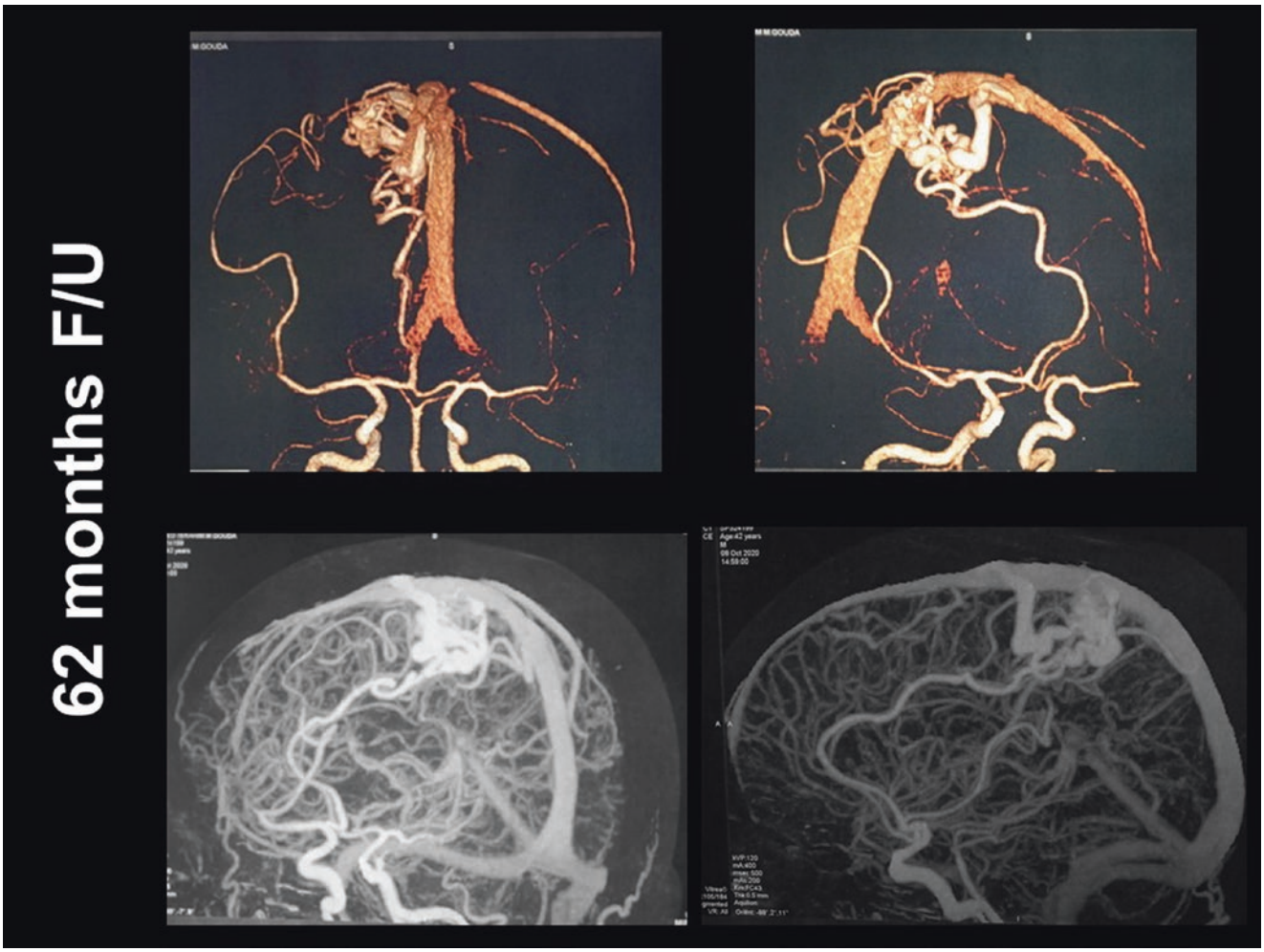

24 months F/U
GAD

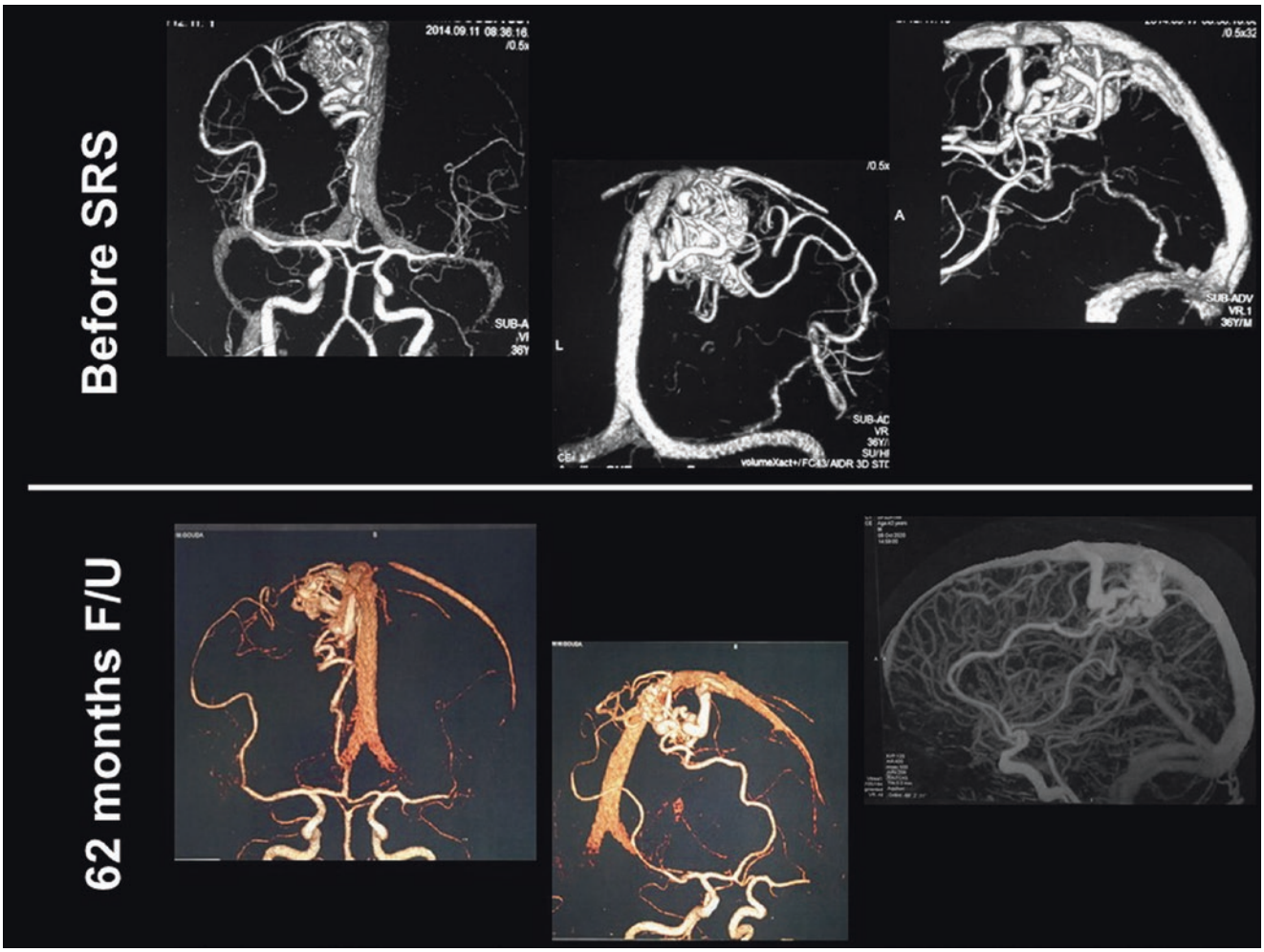

36 months F/U
GAD
GAD


60 months F/U


Before SRS
Gadolinium
60 months F/U
M 43
Aug


0.75s/3
61 months F/U


62 months F/U



Further Reading

Cohen-Inbar O, Starke RM, Paisan G, et al. Early versus late arteriovenous malformation responders after stereotactic radiosurgery: an international multicenter study. J Neurosurg. 2017;127(3):503–11.

Ellis TL, Friedman WA, Bova FJ, et al. Analysis of treatment failure after radiosurgery for arteriovenous malformations. J Neurosurg. 1998;89(1):104–11.

Gallina P, Merienne L, Meder JF, et al. Failure in radiosurgery treatment of cerebral arteriovenous malformations. Neurosurgery. 1998;42(5):996–1002.

Hadjipanayis CG, Levy EI, Niranjan A, et al. Stereotactic radiosurgery for motor cortex region arteriovenous malformations. Neurosurgery. 2001;48(1):70–7.

Levegrün S, Hof H, Essig M, et al. Radiation-induced changes of brain tissue after radiosurgery in patients with arteriovenous malformations: dose/volume-response relations. Strahlenther Onkol. 2004;180(12):758–67.

Zabel-du Bois A, Milker-Zabel S, Huber P, et al. Stereotactic linac-based radiosurgery in the treatment of cerebral arteriovenous malformations located deep, involving corpus callosum, motor cortex, or brainstem. Int J Radiat Oncol Biol Phys. 2006;64(4):1044–8.