

Background:

Treatment of arterio-venous malformations (AVM) of the brain can be a challenge due to the complexity of location, size and their proximity to the cerebral vascular circulation. stereotactic radiosurgery (SRS) recent advanced in catheter technique and new embolization materials, in particular Onyx have increased the success rate of total and near-total obliteration. The use of Onyx cause distortion of the MRI and CT images and there for has to be considering in any radiation treatment planning.

Methods and Material:Between 12/2006 and 12/2008 we treated 13 AVM patients after Onyx immobilization with SRS. A bottle with 1.5ml of onyx been irradiate to find and define the absorption of it per mm of thickness, after doing that we contor the onyx and the projected area in the planning system and apply a homeginity correction to virtual organ that been draw. a pinpoint chamber been used for relative measurement because of the size of the bottle.

Results:

In particular larger Onyx embolized AVMs showed significant imaging artefacts especially on CT, which rendered this imaging modality useless for planning purposes. The absorption of the onyx with thickness of about 15mm was up to 5.6% higher compare to a 15mm of bolous without the onyx.

Conclusion:

The use of Onyx caused significant image artefact on MR and more so on CT. this results shows the importance of the correction that need to apply manually in the planning system. For patient with a large area and volume of onyx, this results shows the crucial of the correction that must be applied, if not a dose calculation can be completely wrong especially for radiosurgery patients, who prescribed high dose in single fraction to a completely healthy brain.