

Venous Sinus Stenting qMRA correlates with intravascular pressures

Case No. 023

PHYSICIAN'S CONCERNS?

Worsening symptoms and vision loss.

HOW DID NOVA HELP?

qMRA quantifies the improvement in blood flow after treatment and allows for non-invasive follow up.

Patient History

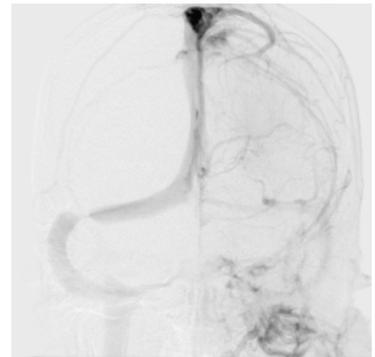
- ❖ 66 year old man presenting with right vision loss, referred by ophthalmology.
- ❖ Risk factors: hypertension, hyperlipidemia
- ❖ Prior history of stroke 10 yrs ago, renal failure, and left vision loss.

Pre-treatment angiography revealed a grade 1 dural arteriovenous fistula of the posterior segment of the superior sagittal sinus (SSS) with feeders from branches of external carotid artery bilaterally, which was in association with a severe stenosis of the dominant right transverse sinus. Trans venous pressure measurements demonstrated a gradient of approximately 40 mm Hg across the stenosis. After angioplasty and stenting, transvenous pressure measurements decreased from a mean of 55 mm Hg pre-stenting to a mean of 16 mm Hg post-stenting.

The AVDF was subsequently treated with two consecutive embolizations of the left occipital and left MCA feeders.

Angiography

Pre-stent



Post-stent

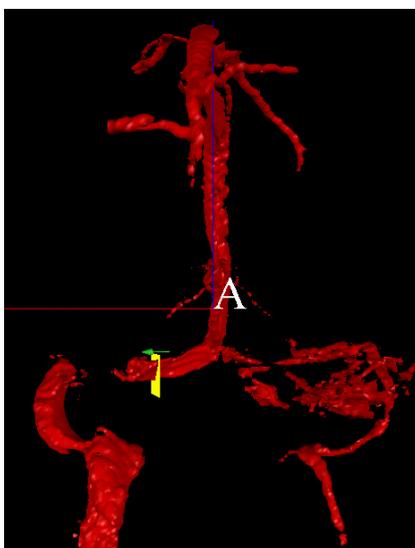
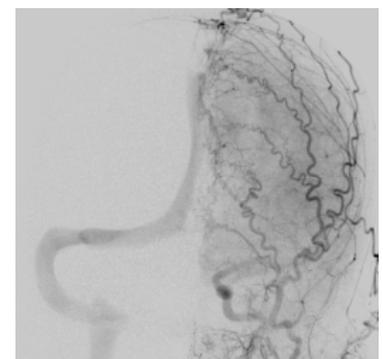


Fig.1 Artifact from stent does not affect flow measurement.

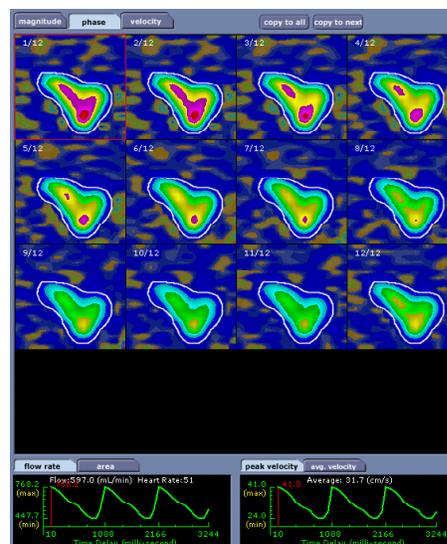
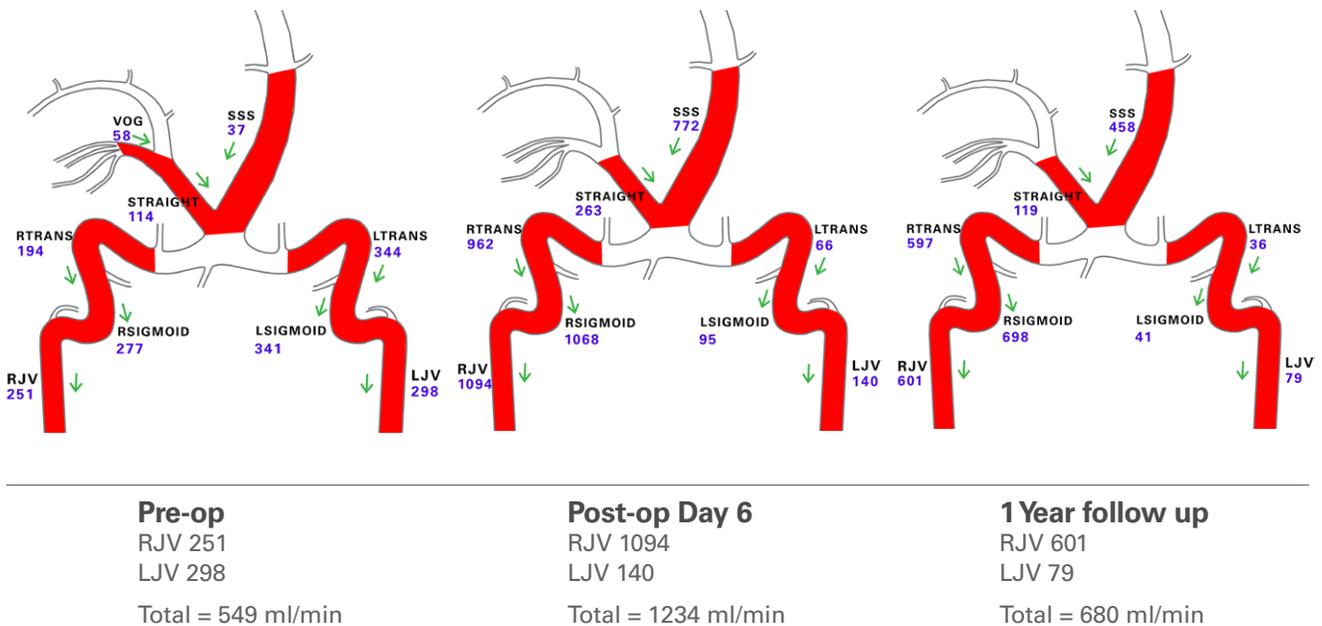


Fig. 2 Velocity contours and flow waveforms for the right transverse sinus. Contour is elliptical, not round.

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Fig.3 Cerebral Venous Maps – Longitudinal Flow Studies



Conclusions

- ❖ NOVA aids in decision making by providing quantitative measurement of blood flow pre and post venous sinus stenting.
- ❖ Non invasive flow measurements are correlated with transvenous pressure measurements.
- ❖ The relationship between total venous drainage and total cerebral blood flow is defined.
- ❖ NOVA qMRA is performed without contrast and the artifact from the stent does not affect the accuracy of the flow measurements. Thus qMRA is an excellent choice for longitudinal follow up.

¹ Reference: Esfahani D, Stevenson M, Moss H, Amin-Hanjani S, Aletich V, Charbel F, Alaraj A. Quantitative MRA is Correlated with Intravascular Pressures Before and After Venous Sinus Stenting: Implications for Treatment and Monitoring. J Neurointerv Surg. 2014 Jul;6 Suppl 1:A6-7.