



# Reliability of Magnetic Resonance Venography (MRV) Compared to Digital Subtracted Venography (DSV) in Evaluation of Dural Venous Sinus Stenosis (DVSS)

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### Introduction

A percentage of patients with idiopathic intracranial hypertension (IIH) have venous sinus stenosis. A subset of patients are undergoing interventional evaluation of stenosis with venography and manometry in consideration for stenting. MRV is used in the diagnosis of cerebral sinus thrombosis but little literature exists regarding its reliability when compared to the “gold standard” DSV. The purpose of this study was to evaluate the reliability of MRV and determine its sensitivity and specificity.

### Methods

Thirty-two patients with the diagnosis of IIH and evaluated with both an MRV and DSV were included in the study. MRV images were reviewed by two Radiologists who scored DVSS as very mild, mild, moderate, or severe based on percentage stenosis <25%, 25-50%, 50-75%, >75%, respectively. The percent stenosis results were obtained from DSV on each patient for comparison. Inter-observer reliability was calculated based on 40 data as some patients had bilateral equal drainage of the venous system. Thirty-seven data points were available to compare MRV to DSV based on dominance of flow within the venous system on angiography.

### Results

The inter-observer reliability for stenosis greater than 50% (moderate/severe) of the MRV evaluations is 72.5% with a Kappa of 0.257 suggesting fair agreement. Based on the senior radiologists readings the sensitivity and specificity of MRV as compared to DSV for greater than 50% stenosis is 86.4% and 20.0%, respectively. MRV had a positive predictive value and negative predictive value of 61.3% and 50.0%, respectively.

### Conclusions

Upon calculation of our results, MRV appears to have a high sensitivity but poor specificity as compared to angiogram for DVSS > 50%. The inter-observer reliability of only 72% demonstrates that these scans are most helpful when evaluated by a Radiologist familiar with the studies. The tests can be helpful screening tool for dural sinus stenosis but further work needs to be performed to determine if DSA is a true gold standard when compared with manometry readings accross different grades of stenosis. This is an important future area that may prove that degree of stenosis does not correlate with need for sinus stenting in the treatment of pseudotumor patients. Future studies may prove that although MRV is a sensitive screening test it may be an extra cost if degree of stenosis has no correlation with a treatable dural sinus pressure gradient.

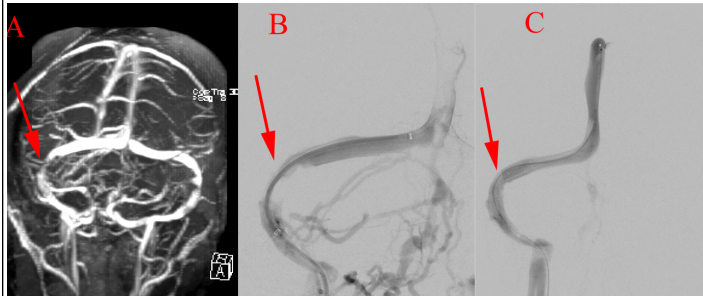
### Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the utility of MRV when evaluating a patient for IIH. 2) Discuss the weakness of using MRV when considering IIH as compared to DSV. 3) Identify that MRV exams should be evaluated by an experienced practitioner when considering DVSS.

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### MRV and DSV Right Transverse Sinus Stenosis



A. MRV with arrow demonstrating area of stenosis. B. DSV with arrow demonstrating area of stenosis. C. Post stenting of area of stenosis.