Follow-up of intracranial aneurysms treated by SILK flow diverter: comparison of three-dimensional time-of-flight MR angiography (3D-TOF-MRA) and contrast-enhanced MR angiography (CE-MRA) with digital subtraction angiography (DSA) as the gold standard.

Authors:
Patro S, M.D., Iancu D, M.D., Thornhill R, PhD, Larocque N, BHSc., Quateen A, M.D., Lum C, M.D.

Purpose:
To compare the diagnostic accuracy of 3D-TOF-MRA and CE-MRA for the evaluation of aneurysm occlusion and parent artery patency after flow diversion treatment, with digital subtraction angiography (DSA) as the gold standard.

Methods:
Patients treated with SILK flow diverter between August 2012 and October 2014 followed by MRA (3D-TOF-MRA and CE-MRA) and DSA within 3 weeks period were retrospectively reviewed from a prospective single-center database. Images were randomly presented to two independent blinded readers. Aneurysm occlusion and parent artery patency were evaluated.

Results:
There were 15 patients with 18 aneurysms and 31 sets of imaging included. Interobserver agreement for aneurysm occlusion and instent stenosis were substantial for DSA, CE-MRA and TOF-MRA. With respect to aneurysm occlusion, CE-MRA conferred similar performance to TOF (sensitivity 95% vs. 100%; specificity 79% vs. 63%). While both CEMRA and TOF provided similar specificity for detection of instent stenoses, CEMRA provided greater sensitivity than TOF (60% vs 35%).

Conclusion:
While our results suggest that 3T did not confer a benefit in accuracy, the number of patients in each group was too small to identify differences at this stage of analysis.