

E-214 ENDOVASCULAR TREATMENT OF DISSECTING VERTEBRAL ARTERY ANEURYSMS: A 20-YEAR INSTITUTIONAL EXPERIENCE

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Background Vertebral artery dissecting aneurysms (VADAs) are a rare cause of subarachnoid hemorrhage associated with high rates of morbidity and mortality. Ruptured non-dominant VADAs are traditionally treated via endovascular coil-occlusion. However, controversy exist for the appropriate management of unruptured VADAs and ruptured dominant VADAs. To the authors knowledge, this is the largest single-center study comparing modern neuroendovascular neurosurgical treatment strategies, including flow diversion (FD), to treat VADAs.

Methods All patients with a VADA treated endovascularly at a single center from January 1st, 1999 to December 31st, 2019 were retrospectively analyzed from a prospectively collected database. VADAs were categorized as either dominant or non-dominant vertebral artery. Furthermore, location of the VADA was classified as either the proximal V4 segment of the vertebral artery (proximal to PICA), incorporating PICA origin, or (distal V4) distal to PICA. Primary neurological outcomes were measured via mRS, with a mRS >2 categorized as a poor neurological outcome and a decline in mRS from the preoperative neurological exam as a worse neurological outcome. Secondary outcomes included retreatment rate and complications.

Results 91 patients underwent endovascular treatment for a VADA over this 20-year period (44 patients underwent open microsurgical intervention). 77 (85%) VADAs were on the proximal V4 segment, 8 (9%) included the PICA origin, and 6 (7%) arose distal to PICA. Coil-occlusion was performed in 47 (51%), FD in 29 (32%), and stent/coil in 15 (17%) cases. 54 patients (59%) presented with SAH (treated via coil-occlusion in 39, FD in 7, and stent/coil in 8 cases; $p < 0.001$) and 44 VADAs (48%) involved a dominant vertebral artery (all dominant vertebral arteries were treated by either a FD or stent/coil; $p < 0.001$). Rates of complications and retreatment were both significantly higher in patients treated with stent/coil (complication: $N=4$, 27%, retreatment: $N=6$, 40%) vs either coil-occlusion (complication: $N=1$, 2%, retreatment=2, 4%) or FD (complication: $N=2$, 7%, retreatment: $N=4$, 14%) ($p=0.008$ and $p=0.002$, respectively). Preoperative mRS was significantly higher in patients treated with coil-occlusion (3.2 ± 1.4) than FDD (1.9 ± 1.5) or stent/coil (1.8 ± 1.3) ($p < 0.001$). Likewise, coil-occlusion (22, 46%) was associated with a higher percentage of patients with a mRS >2 on follow-up than FDD (4, 14%) or stent/coil (3, 20%) ($p=0.006$). For dominant vertebral arteries, stent/coil (6, 40%) required greater percentage of retreatments than FD (4, 14%) ($p=0.049$). Of the unruptured VADAs ($N=37$), 1 patient suffered a complication (3%), 4 patients (11%) required retreatment, 2 patients (5%) had mRS >2, and 8 patients (22%) exhibited a decline in mRS on follow-up, with no significant difference between the treatments.

Conclusion The majority of ruptured VADAs at our center were treated by coil-occlusion of non-dominant vertebral artery. For dominant vertebral arteries, FD required less retreatment than stent/coil cases. Furthermore, endovascular treatment of unruptured VADAs is safe and associated with favorable angiographic and neurological outcomes.

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E-215 ROTATIONAL ANGIOGRAPHY COMPLICATED BY ANEURYSM RERUPTURE: A CASE SERIES

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Introduction Digital subtraction angiography (DSA) is considered the gold standard for diagnosing intracranial aneurysms. In cases of aneurysmal subarachnoid hemorrhage (aSAH), 3DRA has become standard of care to detect aneurysms and to plan treatment in cases with inconclusive noninvasive imaging. Rerupture during angiography with contrast extravasation is a rare but devastating complication and has a mortality of 50% to 80%. In this case series, we report our experience of aneurysm rerupture as a complication of 3DRA for aSAH.

Methods The electronic medical records of eight patients across four separate institutions who underwent 3DRA for evaluation of aneurysm after aSAH were reviewed. Data from patient medical charts and their angiographic procedures were reviewed to assess both clinical and angiographic outcomes. Overall case descriptions and patients' histories were reviewed and described in detail.

Results Of the eight cases reviewed, the mean aneurysm size was 9.7 ± 5.5 mm and the mean Hunt Hess and modified Fisher Score on arrival were 3.5 ± 0.96 and 3.25 ± 0.83 respectively. Injection rate, injection volume, and pressure were 3.6 ± 1.4 mL/s, 21 ± 2.1 mL, and 488 ± 124 psi. Inpatient mortality after aneurysmal rerupture was 37.5% ($n=3$), with 37.5% ($n=3$) requiring EVD placement and 50% ($n=4$) requiring craniectomy.

Conclusion This is the first series to report aneurysm rerupture as a complication of 3DRA. Rerupture during 3DRA is a devastating complication that commonly led to patient mortality in our series. Future studies will be needed to further elucidate characteristics of patients associated with 3DRA complications and to compare 3DRA complication rates with other aSAH diagnostic modalities.

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E-216 THE EFFECT OF OMEPRAZOLE ON PATIENTS TAKING CLOPIDOGREL AFTER FLOW DIVERTER DEVICE PLACEMENT

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Background Omeprazole is a common proton pump inhibitor (PPI) that interferes with clopidogrel hepatic activation, potentially reducing its platelet inhibition efficacy. In the cardiovascular literature, omeprazole has been reported to increase P2Y12