

Purpose The endovascular coiling of cerebral aneurysm is fundamentally based on exact evaluation of aneurysm size, shape and so-called working angle of procedure. Nowadays, as initial surveillance procedures, CT angiography has been performed prior to endovascular coiling of ruptured aneurysms. We retrospectively compared the initial CT angiography and initial working angle angiography focusing to interval changes, chosen treatment modality and its results.

Material and methods One hundred twenty two patients, each with ruptured cerebral aneurysm(s), underwent endovascular coiling procedure between 2012 Jan and 2014 Nov. Immediately after recognition of subarachnoid hemorrhage (SAH) symptom or mental change, CT angiography was checked as initial diagnostic procedure. After confirmation of SAH, catheter angiography was performed for decision making. We compared the CT angiography and catheter angiography and subgrouping was performed same as follows; Group 1 = no changes, group 2 = smaller aneurysm at catheter angiography, group 3 = larger aneurysm at catheter angiography.

Results The mean age was 53.9 years and female patients were dominant (80 cases). The mean interval of getting first image between CT angiography and catheter angiography was 115 minutes. Group 1 was 107 cases (87.7%). Group 2 was 11 cases (9.0%). Group 3 was 4 cases (3.3%). In group 2, the specific aneurysm location did not exist. Rather, "narrow neck with saccular dome" pattern was dominant (6 cases; 54.5% of group 2). The coiling procedures were successful in 9 cases (81.8%) in group 2, and one case of failed coiling showed typical discrepancy between CT angiography and catheter angiography. In group 3, specific aneurysm location could be found definitely; the dorsal wall of internal carotid artery was dominant (3 cases; 75% of group 3). In both groups, coiling procedures could be performed effectively based on working angle angiography as well as CT angiography.

Conclusion The discordance between CT angiography and catheter angiography was infrequent, but in these cases, mutual supplement is critical for exact decision making and safe endovascular coiling procedure. The CT angiography should be performed with same importance of working angle angiography.

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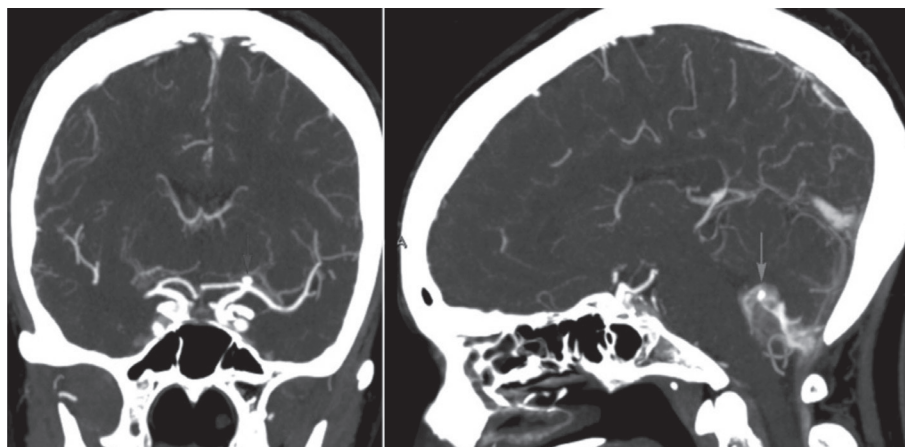
E-062 CEREBRAL ANEURYSM DEBUTING AS RUPTURE DURING DIAGNOSTIC CT ANGIOGRAPHY: AN UNEXPECTED WORST-CASE SCENARIO

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Introduction Rupture of a previously-asymptomatic intracranial aneurysm rupture is occasionally encountered during endovascular coiling, but is not considered a significant risk during invasive angiography and is seen rarely.¹ Acute rupture at the exact time of computed tomographic angiography (CTA) has not previously been reported, and intravenous contrast injection is not felt to be a risk factor for aneurysm rupture. Typically, CTA acquisition is not supervised by a physician, and identification/reporting of acute phenomena by a radiographer is not currently standardized. We describe a case of rupture at the time of CTA, after which the patient experienced decompensation in an unsupervised waiting area.

Case presentation An asymptomatic 40 year-old woman was referred for evaluation of a left-sided unruptured carotid bifurcation aneurysm identified on workup for headaches. Upon returning from the CTA suite, she became progressively confused, and was immediately transferred to the emergency department. Rapid neurological deterioration ensued, as her Glasgow coma scale dropped to 3 and her pupils became unreactive at 6 mm. The question of contrast allergy was initially raised. CTA revealed a previously-undetected posterior inferior cerebellar artery (PICA) aneurysm which demonstrated active contrast extravasation. She was urgently sedated, intubated, and infused with mannitol. A repeat unenhanced head CT showed a Fisher grade 4 subarachnoid hemorrhage with intraventricular extension and hydrocephalus, characteristic of ruptured PICA aneurysm. Bilateral external ventricular drains were placed, and a suboccipital craniectomy was performed expeditiously with successful haematoma evacuation and aneurysm clipping. She was transferred in stable condition to the neuro-intensive care unit, but unfortunately succumbed to vasospasm 10 days later.



Abstract E-062 Figure 1

Discussion This is the only case that has ever been observed in the careers of our staff of at our high-volume aneurysm center. The likelihood of this occurrence is certainly extraordinarily small. Nevertheless, high clinical suspicion is paramount for a fast, stepwise, and effective therapeutic response. The patient was unsupervised and it was only by chance that her deterioration was necessarily witnessed. In collaboration with our CT technologists, we held instituted in-services during which our staff were educated about ominous imaging findings and encouraged to emergently call a radiologist to confirm these. We propose that centers performing neuroimaging should at the very least be prepared to both supervise and initially manage patients who deteriorate. In addition, while many radiographers will inform an attending radiologist or another physician when an imaging finding appears concerning, standardization in the recognition and reporting of some acute pathological entities may improve detection and response in imaging departments.

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E-063 PERCUTANEOUS BLEOMYCIN SCLEROTHERAPY FOR CONJUNCTIVAL VENOUS AND LYMPHATIC MALFORMATIONS

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Purpose To describe the use of bleomycin in a foam preparation and or undiluted in slow flow vascular lesions that involve the conjunctiva as the sole treatment

Material and methods 5 patients with venous malformations, and 2 with lymphatic malformations involving the conjunctiva were treated with various combination bleomycin injections in to the lesion under direct puncture, using various needles and or angio-catheters; and monitored with US or DSA.

Results There was significant improvement, or near total resolution in all patients with a follow up of up to 3 years, there were no complications

Conclusions The use of bleomycin in various forms appears as a simple, safe and very effective treatment for low flow vascular lesions involving the conjunctiva, avoiding more elaborated and challenging surgical intervention.

Disclosures A. Berenstein: None.

E-064 ADJUNCTIVE STENT ARE NOT FLOW DIVERTERS: A COMPUTATIONAL FLOW DYNAMICS STUDY COMPARING FLOW DIVERTERS TO ADJUNCTIVE STENTS

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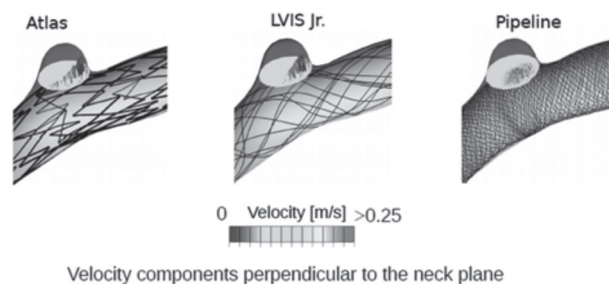
Introduction Historically, adjunctive stents had different constructions than flow diverters. The former were open- (e.g. Neuroform) or closed-cell (e.g. Enterprise) laser cut nitinol devices, with low metal-to-artery ratios and pore densities. The recent introduction of woven adjunctive stents (e.g. LVIS

Jr., Leo Baby) blurred the line between adjunctive stents and flow diverters (e.g. Pipeline Embolization Device or PED). There is a misconception that woven adjunctive stents have flow diverting capabilities. A computational flow dynamic (CFD) model was used to compare the flow alteration effects of two adjunctive stents (Neuroform Atlas and LVIS Jr.) and one flow diverter (PED).

Materials and methods A CFD study was performed on a 2.6 mm sidewall aneurysm in a 2.2–2.3 mm diameter vessel. Three stents were modeled: Neuroform Atlas (3.0 × 24 mm), LVIS Jr. (3.5 × 20 mm), PED (2.75 × 10 mm). The stent was virtually deployed in a compliant vessel model with a wall thickness of 0.6 mm using Finite Element Analysis. For the flow conditions, stress free outlet was assumed with a steady state flow of 2.1 mL/s. Six CFD runs were performed on each adjunctive stent with varying degrees of rotation and placement. The following definitions were used; % aneurysm inflow = inflow rate/parent artery flow rate, turnover time = aneurysm volume/inflow rate, impact zone = area of aneurysm with WSS > 2 Pa. Two-sample T-tests compared Atlas to LVIS Jr.

Results The CFD study revealed that the 2 adjunctive stents did not divert a significant amount of flow when compared to a flow diverter (Table 1). When compared to each other, the average values for % aneurysm inflow (P = 0.265), turnover time (P = 0.960), and impact zone (P = 0.135) were not statistically different. In contrast, the PED significantly reduced % aneurysm inflow, turnover time, and impact zone.

Conclusions This analysis revealed that adjunctive stents do not divert flow significantly when compared to pre-treatment baselines. Only a flow diverter significantly altered the flow dynamics within the aneurysm. There was no statistically significant difference in the flow diversion capabilities between the two adjunctive stents.



Abstract E-064 Figure 1

Abstract E-064 Table 1 Averaged results from CFD analysis of 2 adjunctive stents and a PED

Model	% Aneurysm inflow	Turnover time (S)	Impact zone (mm ² - %)
Pre-treatment	8%	0.0154	7.4 – 98%
Atlas	6.2%	0.0215	7.43 – 94%
LVIS Jr.	5.8%	0.0213	6.8 – 89%
PED	1.4%	0.09	0.04 – 0.6%

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