

achieved in 86.7% (13/15) of patients. Notably, one patient was approached via primary radial access, however resorted to a transfemoral approach; successful revascularization to mTICI 2 c was achieved.

As may be expected, in patients where radial access second intention, time to clot engagement was 91 minutes [IQR 51.5–125.5] (mean = 115.6 ± 53.8) from initial attempts; however, from secondary transradial attempts, median time was 44 minutes [14.0–77.0] (mean = 52.7 ± 46.3).

The median time difference between initial puncture to radial access rescue therapy was 14 minutes [IQR 2–46.5] (mean 35.7 ± 52.0). Success was achieved in 70.6% (12/17) of cases in this cohort. Overall, successful revascularization was achieved in 78.1% (25/32) of patients; mTICI scores were not available in 2 patients. There were 4 peri-procedural complications; however, none were considered related to radial access.

Conclusion While femoral access remains the standard operating procedure for endovascular intervention of acute ischemic stroke, in patients with tortuous vascular anatomy, or having severe femoral disease, access via transfemoral is discouraged. Results from our study demonstrate that radial access is a safe and promising alternative, both as primary and rescue attempts. In an effort to reduce overall procedural time, radial access should be considered for qualified patients. A larger sample size would better validate the present findings.

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E-089 IATROGENIC POST-OPERATIVE CAROTID ARTERY PSEUDOANEURYSMS, DIAGNOSIS AND ENDOVASCULAR MANAGEMENT

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Object Management of post-operative traumatic pseudoaneurysm of the external carotid and common carotid arteries has not been well characterized. Common presentation with early post-operative hemorrhages requires early diagnosis. We describe our experience with these lesions and review our diagnosis protocol, endovascular treatment and outcome.

Methods This is a retrospective review of patients treated between 2005–2014. Early post operative hemorrhages required immediate packing by ENT surgeon, hemodynamic stabilization and diagnostic workup, usually by CTA and DSA evaluation. We utilized an angiographic protocol to characterize the lesion, the vessel involved and the collateral circulation patency. We utilized combination of coils and nBCA glue embolization, to obliterate the lesion and the vessel segment along the external carotid distribution. Post embolization specific Super-selective injections were utilized to verify complete occlusion. Immediate and early clinical and angiographic results were reviewed.

Results We have treated 16 patients in this cohort. Thirteen lesions were associated with maxillofacial/oral surgeries and three were associated with tumor surgeries. Fifteen lesions were located in the ECA branches and one was located in the

CCA. Fifteen patients presented with acute hemorrhage. We identified 13 pseudoaneurysms and three vessels interruptions.

There were no procedural ruptures or complications. All aneurysms were completely obliterated, with early unpacking by ENT surgeon and hemodynamic stability, without any early re-hemorrhages. No early or delayed signs of ischemia were noted.

Conclusions Carotid artery pseudoaneurysm, post maxillofacial/oral surgery can be treated early and effectively by endovascular procedures. High suspicion and early diagnosis associated with hemorrhages is crucial. Prompt imaging usually by CTA followed by selective cerebral angiography are highly effective. Utilization of coils and liquid embolic material can achieve immediate obliteration of the lesion and vessel segment. Selective post embolization studies of the collateral circulation are essential to confirm complete occlusion.

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E-090 FEASIBILITY OF A VASCULAR REPLICATOR FOR ENDOVASCULAR PROCEDURE REHEARSAL

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Background Multiple studies have shown the benefit of simulator use for medical trainees. In the endovascular realm, this has been demonstrated in the cardiac, vascular and neurovascular literature with both computer simulation models and physical models of the vasculature. In this study, the authors investigate the feasibility of a customized 3D model, not for training purposes, but for rehearsal prior to an actual endovascular treatment procedure.

Methods Thirty-five patients with intracerebral aneurysms in various locations were enrolled in the study. Cases were chosen based on attending surgeon preference. Rotational 3D imaging studies of the pertinent vascular distribution were used to manufacture a 3D vascular model of that patient's vascular tree. Then, prior to the actual procedure, the attending neurointerventionalist performed a practice procedure on the 3D flow model. The model was used in conjunction with a complete system containing a biphasic pump to simulate the cardiac cycle and blood flow (Vascular Simulations, Stony Brook, USA). This was a full procedure, done as the treatment procedure would be, using research materials, and a complete neuroangiography system. After the actual treatment procedure, comments were recorded from the neurointerventionalist regarding the potential benefit of the practice session.

Results Thirty-six procedures were done in thirty-five patients, 28 of the replicator sessions proved to be useful. Eight patients had replicator sessions that were not useful, and all of these were due to some failure of the replicated model. Models leaked in 4 cases, key vessels were not patent in the model in 4 cases, and 3 models had anatomic inaccuracies. When useful, the replicator sessions showed varying types of utility; allowing the operator to properly size a device, helping to choose the best wire and catheter combination to select a distal vessel, helping to understand the best landing zone for a stent, or simply allowing the operator to practice the procedure before the official treatment.

Discussion It is reasonable to think that any chance to practice a procedure prior to the final attempt at treatment would be beneficial to the physician and, by extension, the patient. This study shows that replicator practice sessions are feasible as long as the replicator model is a functional and faithful representation of the patient's vasculature. In many cases, the replicator session provided an opportunity to correctly size the endovascular device, and avoid resheathing these devices in the patient's intracranial vasculature during the actual procedure. This has the potential to reduce operative time and lower the risk of complications. But the benefits are not limited to properly sizing implants. Even just a chance to rehearse the maneuvers of a procedure benefit the patient in terms of helping to avoid difficulty during the treatment procedure.

Conclusion Difficult endovascular cases, or cases in which a new technology is being used, benefit from a practice session with an individualized 3D model, created to represent the patient's intracranial vasculature. This holds true only when the 3D model is a functional and accurate reflection of the individual's anatomy.

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E-091 TREATMENT OF ANEURYSMS OF THE PERICALLOSAL ARTERY WITH THE PIPELINE EMBOLIZATION DEVICE

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Background/objective Pericallosal artery aneurysm treatment is challenging using traditional endovascular techniques due to the small caliber of the parent vessel and distal access. Wide neck and bifurcation aneurysms in this location require manipulation with 2 catheters for balloon assisted or stent assisted coil embolization with increased friction and limited margin for error. We demonstrate the feasibility, efficacy and safety of endovascular treatment of pericallosal artery aneurysm using flow diversion technology.

Methods We performed a retrospective review of our institutional database from July 2013 through July 2015. Five subjects with a pericallosal artery aneurysm that was treated with the Pipeline embolization device (PED) were identified. We evaluated for technical feasibility, presence of procedural complication, angiographic results, and clinical outcome.

Results Successful placement of a single PED across the neck of the aneurysm was achieved in all cases. No procedure-related complications were encountered. A 6 month follow-up angiogram was available for 4 patients and a 12 month follow-up angiogram was available for 2 patients. Four out of 5 patients had complete aneurysm occlusion demonstrated, 3 of them were demonstrated at the 6 month follow-up and 1 at 12 month follow-up. The subject for which occlusion was demonstrated at the 12 month follow-up did not have a 6 month angiogram available for review. One patient had

persistent aneurysm filling at 6 month, with a 50–60% decrease in aneurysm size. There were 2 cases of narrowing of at the origin of an artery that had been covered by the PED, without flow limitation or clinical consequences. There was no evidence of in-stent stenosis or intimal hyperplasia. No thromboembolic or hemorrhagic complication was seen. Modified Rankin scale scores remained unchanged from baseline.

Conclusions Our preliminary results support the use of flow diverter stent for treatment of aneurysms of the pericallosal artery with high rate of aneurysm occlusion, without evidence of increased procedural complication or short-term morbidity. A long-term and larger cohort study is desirable to validate our results.

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E-092 COIL EMBOLIZATION OF INDIRECT CAROTID-CAVERNOUS FISTULA: THE ROLE OF DYNACT IN PRE-TREATMENT PLANNING

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Introduction/purpose Indirect Carotid-Cavernous Fistulas (CCF) are arterio-venous shunts between branches of the ICA, ECA or both and the cavernous sinus. Indirect CCFs are treated with coil embolization when they present with orbital/visual symptoms or if there is cortical venous reflux. The target for endovascular treatment in indirect CCF is the occlusion of the venous side of the fistula. Due to intricate anatomy of the cavernous sinus, the fistula site and foot of the draining venous structure are difficult to localize with confidence. This makes treatment a complex and long procedure requiring a large number of coils. Most of the time the treatment is done without actually localizing the fistula site and by packing the whole cavernous sinus with coils, sometimes resulting in additional complications, long procedure times and a large number of coils used per procedure.

The purpose of this study was to examine the role of DynaCT in pre-treatment localization of the fistula site for indirect CCF, and to examine if identification of fistula site would improve treatment by shortening the procedure time, requiring fewer coils or by reducing complication rate.