Abstract E-065 Figure 1

aneurysms appeared more frequent at older ages (log rank $p < 0.001$), See figure 1.

Conclusion Centrally located bAVM, especially when supra-tentorial and with deep or mixed venous drainage are more frequent in patients with ruptured bAVM early in life. On the contrary, arterial or nidal aneurysm is less frequent in younger patients, possibly indicating that these frailty features develop later. Whether their occurrence in adult unruptured bAVM justify treatment need to be confirmed in prospective studies.

Disclosures L. Garzelli: None. E. Shotar: None. T. Blauwblomme: None. N. Sourour: None. Q. Alias: None. B. Mathon: None. M. Kossorotoff: None. V. Degos: None. F. Gariel: None. N. Boddart: None. F. Brunelle: None. P. Meyer: None. O. Naggara: None. F. Clarençon: None. G. Boulouis: None.

E-066 ONYX EMBOLIZATION OF CAROTID-CAVERNOUS FISTULAS AND ITS IMPACT ON INTRAOCULAR PRESSURE AND RECURRENCE

F Al Saiegh*, N Mouchtouris, K Hafazalla, N Chalouhi, S Tjoumakaris, R Gooch, A Stefanelli, R Rosenwasser, P Jabbour. *Neurosurgery, Thomas Jefferson University Hospital, Philadelphia, PA*

10.1136/neurintsurg-2019-SNIS.141

Introduction Carotid-cavernous fistulas (CCF) are pathologic arteriovenous shunts into the cavernous sinus (CS) leading to venous congestion. The arterial supply arises from the internal carotid (ICA, type A), meningeal ICA branches (type B), meningeal external carotid branches (type C), or internal and external carotid meningeal branches (type D). Patients usually present with chemosis, proptosis, diplopia, or vision loss. Ophthalmologic examination often reveals an intra-ocular pressure (IOP), greater than 20 mmHg.

Methods A prospectively maintained database of all CCF patients with IOP data was reviewed and 48 cases were identified from 2009–2018 and included in the analysis. Patients were followed for an average of 13.2 months.

Results Most type A fistulas were treated with transarterial embolization (93%), balloon-assistance was used in 66% of those cases. Most type B-D fistulas were embolized transvenously (69%) via the inferior petrosal sinus, facial vein, or superior ophthalmic vein (SOV). In cases with difficult venous

catheterization, an SOV cutdown was performed. Mean preoperative IOP was 23.6 ± 9.1 mmHg, with highest IOPs noted in type B fistulas (32.2 ± 11.2 mmHg). In all subtypes, complete occlusion achieved immediate IOP normalization ($=20$ mmHg) in 79.5% vs. 57.1% with partial occlusion. In type A, complete occlusion achieved IOP normalization in 100% of the cases, but only in 75% of types B-D fistulas. Postoperative increase in IOPs was only noted in type B-D (15.4%). All of these had been completely occluded. Recurrence was noted in 11.3% of all patients, specifically in 7.1% of type A and 12.5% of types B-D. In partially occluded fistulas, recurrence occurred in 33.3% in type A and 9.5% in types B-D. A postoperative increase in IOP was associated with recurrence in only 16.7% of patients. In multivariate analysis, complete occlusion of types B-D CCF was associated with lower odds of recurrence (OR 0.09).

Conclusions Most patients with CCF have elevated IOPs and complete embolization a higher rate of IOP normalization in our series. Recurrence of the fistula was only seen in a small proportion of patients and was lower in type A fistulas after complete occlusion.

Disclosures F. Al Saiegh: None. N. Mouchtouris: None. K. Hafazalla: None. N. Chalouhi: None. S. Tjoumakaris: None. R. Gooch: None. A. Stefanelli: None. R. Rosenwasser: None. P. Jabbour: None.

E-067 ENDOVASCULAR OCCLUSION OF A CAROTID CAVERNOUS ARTERIOVENOUS FISTULA COMPLICATED WITH POSTERIOR COMMUNICATING ARTERY-SPHENOPARIETAL SINUS FISTULA: A CASE REPORT, TECHNICAL CONSIDERATION, AND LITERATURE REVIEW

M Mathkour*, J Berry, E McCormack, E Valle-Giler. *Neurosurgery, Tulane Medical Center/Ochsner Medical Center, New Orleans, LA*

10.1136/neurintsurg-2019-SNIS.142

Background Traumatic injury of the posterior communicating artery causing arteriovenous fistula is rare. Here, we present a complicated case in which a patient presented with a traumatic carotid-cavernous fistula and subsequently developed recurrence. Recurrence was complicated by shunting of the posterior communicating artery to the sphenoparietal sinus post-treatment that was successfully treated endovascularly.

Method A 53-year-old male with a remote history of head trauma complicated by posttraumatic right cavernous carotid fistula presented with progressive headaches. He was treated at another facility via trans-superior ophthalmic vein coil embolization several years prior. CT angiography demonstrated recurrence with a complex fistula. Further investigation via cerebral angiogram demonstrated a type A direct high flow cavernous-carotid fistula with cortical venous drainage and multiple venous aneurysms.

Result The fistula was treated by R ICA deconstruction with coil and Onyx embolization after a balloon occlusion test. Follow up MRI after one year suggested a continued low-pressure fistula. He subsequently underwent cerebral angiogram which showed an indirect fistula, with feeders from ethmoidal arteries and branches of the internal maxillary artery. Outflow was through the sphenoparietal sinus. There was a direct fistula communication in between the posterior communicating artery and fistula outflow. Via the R PCommA, the fistula outflow was embolized using coils and Onyx with almost complete obliteration of the fistula and minimal to no reflux into the right posterior communicating artery. The patient did well postoperatively with complete resolution of headaches and was seen recently in clinic for 6 months follow up visit.

Conclusion We present a patient with carotid-cavernous arteriovenous fistula complicated by subsequent fistula between the posterior communicating artery and sphenoparietal sinus successfully endovascularly treated with complete obliteration of the fistula without reflux. To our knowledge, this is the first such report. We present this case to review the multiple challenges of managing complicated traumatic carotid cavernous arteriovenous fistula and to highlight the utility of endovascular intervention in their treatment.

Disclosures M. Mathkour: None. J. Berry: None. E. McCormack: None. E. Valle-Giler: None.

E-068

TREATMENT OF CAROTID-CAVERNOUS FISTULA PRESENTING WITH CONTRALATERAL EXOPHTHALMOS; SEVERAL EXPERIENCES OF GRAFT STENT

S Chung*, S Chang. *Neurosurgery, Eulji University Hospital, Daejeon, Korea, republic of*

10.1136/neurintsurg-2019-SNIS.143

Object Endovascular detachable balloon occlusion and coil occlusion have been well-established options for the treatment of carotid cavernous fistulas (CCFs). Sporadic treatment of CCFs endovascular covered stent grafting is recently proving an excellent result not only in successful treatment of fistula but also preserving patency of parent artery. In this study, we experienced CCF of a patient who underwent the contralateral exophthalmos in addition to 5 CCF with ipsilateral symptoms treated by graft stent.

Method A 64-year old female presenting with left-sided decreased vision, exophthalmos, injection, and periorbital bruit was found to have a right-sided carotid-cavernous fistula. In addition, we experienced 6 consecutive patients with CCFs underwent the graft stent placement alone at our department during 4 years. Two were direct CCFs with a symptom triad and 4 were indirect CCFs with diplopia or exophthalmos. These patients had periodic clinical follow-up examinations (at 0–29 months) with all receiving angiographic follow-up examination (at 0–15 months).

Results Covered stent placement was technically successful in all 6 patients. Immediate post-procedural complete exclusion of the fistula was achieved in 3 and near complete exclusion with small endo-leak was observed in 3 after stent placement. ICA patency was preserved in all. Symptoms related to CCFs regressed within 1–14 days in all patients after treatment without thromboembolic events. There was no mortality and no immediate post-procedural morbidity related to the procedure. Follow-up cerebral angiography showed complete

Patient sex / age (years)	Sings/symptoms	Stent sizes	Post-procedural angiographic results	Final angiographic FU
F/73	Proptosis, Visual disturbance	Graftmaster 3.5 X 16 mm	Radioanatomic cure without complications	Stable CCF occlusion with ICA patency
*M/28	Conjunctival injection, Mild proptosis	Graftmaster 4.5 X 16 mm	Small endoleak was observed	Stable CCF occlusion with ICA patency
*M/65	Proptosis, Visual loss	Graftmaster 4mm X 12 mm	Radioanatomic cure without complications	Stable CCF occlusion with ICA patency
M/58	Visual disturbance, bruit	Graftmaster 4.8 X 16mm	Radioanatomic cure without complications	Stable CCF occlusion with ICA patency

Abstract E-068 Figure 1