Posterior communicating artery injury

Intracranial pseudoaneurysm is a rare complication of endoscopic endonasal surgery. Herein, Morinaga et al., from Fukuoka University Chikushi Hospital describe two-staged stent assisted coil embolization for posterior communicating artery pseudoaneurysm after endoscopic endonasal surgery for pituitary neuroendocrine tumor.

A 68-year-old man had a history of severe adult growth hormone secretion deficiency, requiring growth hormone replacement therapy; secondary adrenal hypofunction; hyperthyroidism; hypertension; constipation; glaucoma; and hyperuricemia. Five years ago, after initial endoscopic transsphenoidal surgery for pituitary neuroendocrine tumor, he was hospitalized for reoperation. Posterior communicating artery injury was observed during second endoscopic trans-sphenoidal surgery and pressure hemostasis was performed using a hemostatic preparation. Immediately post-surgery, a localized subarachnoid hemorrhage was observed. Sudden-onset impaired consciousness and respiratory disturbances ensued on postoperative day 7, and computed tomography of the head was performed. Recurrent subarachnoid hemorrhage was confirmed, and acute hydrocephalus secondary to third ventricular blockage was identified. Cerebral angiography was performed after urgent bilateral cerebral ventricular drainage under general anesthesia. A pseudoaneurysm was identified in the left posterior communicating artery, and coil embolization was performed. Six weeks post-surgery, LVIS® Jr. stent was placed in the posterior communicating artery. Recurrence of the aneurysm was not detected 6 months post-surgery. He underwent lumboperitoneal shunting for secondary normal pressure hydrocephalus after dual antiplatelet therapy discontinuation and is being followed-up as an outpatient with a modified Rankin Scale of 2 10 months post-surgery.

Two-staged stent-assisted coil embolization using LVIS® stent was effective for a posterior communicating artery pseudoaneurysm occurring after posterior communicating artery injury following endoscopic trans-sphenoidal surgery for Follicle stimulating hormone secreting pituitary neuroendocrine tumor [1)].

Traumatic injury of the posterior communicating artery or the basilar artery causing arteriovenous fistulae is rare.

Ko et al., report an unusual case of the coincidence of a posterior communicating artery-cavernous sinus fistula and a basilar artery-cavernous sinus fistula associated with traumatic pseudoaneurysms of the posterior communicating and basilar arteries. The fistulas and pseudoaneurysms were obliterated completely after staged endovascular surgery via a transarterial and transvenous route.

This is the first such report worldwide [2)].

A middle-aged patient presented with a rapidly growing right dural-based extra-axial posterior clinoid mass extending to the right cavernous sinus that was surgically resected. Histological examination showed solid growth of primitive neuroectodermal tumor arising from the third nerve. Following surgical resection, the patient was further managed by radiation and chemotherapy. Two years later the patient developed new intracranial hemorrhage in the area adjacent to the previous surgical cavity. A cerebral angiogram showed contrast extravasation at the junction of the posterior communicating artery (Pcom) and the right posterior cerebral artery (PCA), with an expanding

pseudoaneurysm. This was managed with N-butyl cyanoacrylate embolization. Autopsy showed microscopic recurrence of tumor into the PCA/PCom region with invasion of the wall of the Pcom. This case report illustrates the concept of vascular blowout in intracranial cerebral vasculature. It appears that, in the presence of risk factors that contribute to weakening of vessel walls (surgery, radiation, tumor recurrence), a blowout can occur intracranially [3].

1)
Morinaga Y, Nii K, Sakamoto K, Inoue R, Mitsutake T, Hanada H. Stent-assisted Coil Embolization for a Ruptured Posterior Communicating Artery Pseudoaneurysm after Endoscopic Trans-sphenoidal Surgery for pituitary neuroendocrine tumor. World Neurosurg. 2018 Dec 21. pii: S1878-8750(18)32870-5. doi: 10.1016/j.wneu.2018.12.047. [Epub ahead of print] PubMed PMID: 30583130.

2)
Ko HC, Koh JS, Shin HS, Lee SH, Ryu CW. Staged Endovascular Occlusion of a Posterior Communicating Artery-Cavernous Sinus Fistula and a Basilar Artery-Cavernous Sinus Fistula Associated with Traumatic Pseudoaneurysms: Technical Consideration and Literature Review. World Neurosurg. 2017 Nov;107:1051.e7-1051.e11. doi: 10.1016/j.wneu.2017.08.070. Epub 2017 Aug 24. Review. PubMed PMID: 28842235.

3)
Alaraj A, Behbahani M, Valyi-Nagy T, Aardsma N, Aletich VA. Rare presentation of intracranial vascular blowout after tumor resection and radiation therapy. J Neurointerv Surg. 2015 May;7(5):e18. doi: 10.1136/neurintsurg-2014-011192.rep. Epub 2014 Apr 24. PubMed PMID: 24763549.