Traumatic intracranial internal carotid artery pseudoaneurysm

see also Internal carotid artery pseudoaneurysm after endoscopic skull base surgery.

LVIS stent-assisted coiling was a feasible approach for the treatment of traumatic intracranial internal carotid artery pseudoaneurysms [1].

Case series

Optimal treatment strategies for traumatic intracranial internal carotid artery pseudoaneurysms are controversial. The low-profile visualized intraluminal support (LVIS) device is a braided stent with a metal coverage rate between traditional laser-cut stents and flow diversion devices. Tan et al. reported the therapy strategy using the LVIS stent-assisted coiling for treatment of traumatic intracranial ICA pseudoaneurysms. Patients with traumatic intracranial ICA pseudoaneurysms treated by the LVIS stent-assisted coiling in our center between January 2015 and June 2021 were reviewed. The complications, radiographic, and clinical outcomes of these patients were analyzed. A total of 12 patients with 12 pseudoaneurysms were included. The mean maximum aneurysm diameter was 6.2 ± 3.1 mm. Nine patients had a subarachnoid hemorrhage; five patients with Hunt-Hess grade III and four patients with grade IV. All procedures were successfully performed without intraoperative complications. Immediate postoperative angiogram showed that six (50%) aneurysms were Raymond grade 1, four (33.3%) were grade 2, and two (16.7%) were grade 3. Postoperative multiple cerebral infarction occurred in two patients because of vasospasm. Of the ten patients with angiographic follow-up (mean, 29.9 months), two received additional coiling because of recanalization of the pseudoaneurysm, and all aneurysms were completely obliterated at the last examination of the patients. During the clinical follow-up period (mean, 26.8 months), the overall mortality and morbidity were 25% (3/12) and 8.3% (1/12), respectively. LVIS stent-assisted coiling was a feasible approach for the treatment of traumatic ICA pseudoaneurysms [2].

Case reports

Rajah et al., report a case of a traumatic skull base internal carotid artery pseudoaneurysm treated with Flow diverter stent. The patient was a 27-year-old male who was involved in a motorcycle accident suffering multiple traumatic injuries including a large skull base fracture that extended through the carotid canal. Computed tomography angiography revealed a 2-cm right ICA pseudoaneurysm. Once the patient was stable, a digital subtraction angiography demonstrated enlargement of the pseudoaneurysm. After his other injuries were addressed by trauma and orthopedic surgery, at day 9 after his initial injury, the patient was loaded with aspirin and clopidrogel in preparation for stent reconstruction of his ICA injury. Under conscious sedation and systemic heparinization, the patient underwent endovascular reconstruction of the large pseudoaneurysm using telescoping flow diversion stents. Immediate intra-aneurysm flow stasis was observed. No procedure-related complications occurred. The patient did well and at last follow-up remained neurologically intact [3].

A case of traumatic intracranial internal carotid artery pseudoaneurysm secondary to skull base fracture, which presented with delayed onset of epistaxis. This was successfully treated by primary endovascular coil embolization. We discuss endovascular treatment options and review the literature [4].

[1] [2], Tan S, Zhou X, Lu Y, Lai L, Huang X, Li B, Wang Y. Low-profile visualized intraluminal support stent for the endovascular treatment of traumatic intracranial internal carotid artery pseudoaneurysms. Neurosurg Rev. 2022 Jan 24. doi: 10.1007/s10143-021-01714-y. Epub ahead of print. PMID: 35067805.

[3] Rajah G, Garling RJ, Rangel-Castilla L. Large Traumatic Skull Base Internal Carotid Artery Pseudoaneurysm managed With Endovascular Flow Diversion: 2-Dimensional Operative Video. Oper Neurosurg (Hagerstown). 2018 May 18. doi: 10.1093/ons/opy119. [Epub ahead of print] PubMed PMID: 29788370.

[4] Al-Jehani HM, Alwadaani HA, Almolani FM. Traumatic intracranial internal carotid artery pseudoaneurysm presenting as epistaxis treated by endovascular coiling. Neurosciences (Riyadh). 2016 Jan;21(1):60-3. doi: 10.17712/nsj.2016.1.20150514. PMID: 26818170; PMCID: PMC5224415.