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Iatrogenic post operative carotid artery pseudoaneurysms; Diagnosis and endovascular management

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Introduction

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

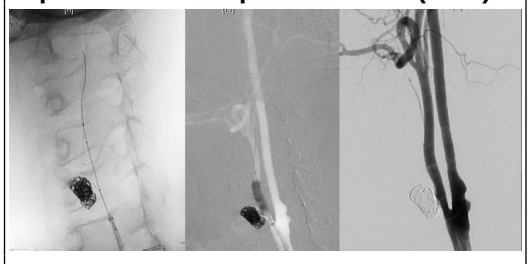
Obliteration of pseudoaneurysm with preservation of parent vessel

Pseudoaneurysm at the proximal ECA, at the right Sup Thyroid artery origin. Superselective microcatheter placement in the aneurysm for coil deployment.

Methods

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 selective cerebral angiography. We utilized an angiographic protocol to characterize the lesion, the vessel involved and the collateral circulation. We utilized combination of coils and nBCA 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. Stent assisted coiling was performed for CCA pseudoaneurysm. Immediate and early clinical and angiographic results were reviewed.

Obliteration of pseudoaneurysm with preservation of parent vessel (cont)



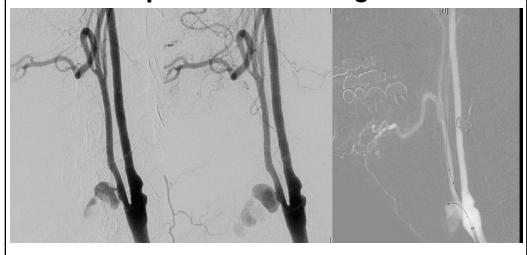
Balloon microcatheter in the parent vessel to prevent reflux of lyquid embolic material (nBCA used to seal the aneurysm and it's enterence) Post embolization complete obliteration of the pseudoaneurysm with preservation of the ECA trunk.

Results

We treated 16 patients in this cohort. Thirteen lesions were associated with benign maxillofacial/oral surgeries, three were associated with surgical tumor resection. Fifteen lesions were located in the ECA branches and one located in the CCA. All patients except the patient harboring CCA pseudoaneurysm presented with acute hemorrhage. We identified angiographycally 13 pseudoaneurysms and three vessels interruptions.

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

Occlusion of a pseudoaneurysm with the parent vessel segment

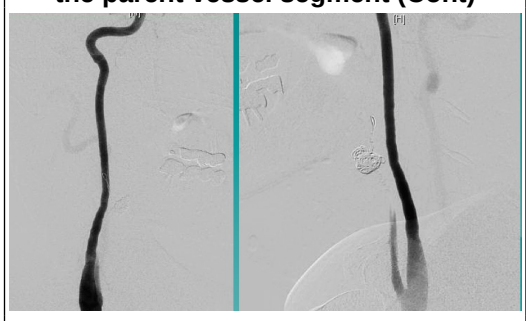


Pseudoaneurysm of the mid ECA trunk. Superselective microcatheter placement in the pseudoaneurysm for coil deployment. A second microcatheter in the parent vessel for coil deployment distal and proximal to the aneurysmal enterance.

Conclusions

Carotid artery pseudoaneurysm, post maxillofacial/oral surgery can be treated early and effectively by endovascular embolization. High suspicion and early diagnosis due to severe 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.

Occlusion of a pseudoaneurysm with the parent vessel segment (Cont)



Liquid embolic material was used to seal the pseudoaneurysm and the segment of the parent vessel between the deployed coils.