

A proposition: Don't push ENDO in such intriguing lesions

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Abstract:

Background: To discuss the proper management in a patient with concomitant bilateral brain infarctions and bilateral carotid artery lesions, who referred to us with subacute stroke.

Case report: A 63-year-old high-risk patient was referred with a pseudoaneurysm of common carotid artery with concomitant bilateral brain infarctions. The common carotid artery was probably inadvertently punctured while trying to insert a jugular line whereas the contralateral internal carotid was occluded. We performed common carotid artery to internal carotid artery bypass with ringed PTFE 6mm, ligation of the external carotid artery and careful debridement. Postoperatively course was uneventful, and he remains in good health, with patency of the graft, six months after the operation.

Conclusion: Carotid artery aneurysm require a vigilant preoperative planning to decide on the proper management. While endovascular therapy is attractive, open surgical repair remains a challenging but winning proposal.

Keywords: carotid artery, pseudoaneurysm, false aneurysm, iatrogenic

INTRODUCTION

Extracranial carotid artery aneurysm is a rare clinical entity, with unknown incidence and scarce data about optimal approach.¹ Post-traumatic carotid aneurysms represent one third of all carotid aneurysms (~33%).² Clinical presentation varies from asymptomatic to stroke or blow-out syndrome and therefore early diagnosis is important.³ There is still no consensus on the optimal management, but with the implement of the universal web-based registry we should obtain further information.^{1,4} We present a case of symptomatic iatrogenic pseudoaneurysm and we describe the treating strategy.

CASE REPORT

A 63-year-old man presented to the emergency department with right hemiplegia. On clinical examination, there was no-

ticed a left-sided cervical mass. He reported a fall few days ago. Also, his medical history included coronary artery bypass graft (CABG) a year ago (with central venous catheter insertion in the left internal jugular vein), peripheral artery disease (femoropopliteal bypass in the right lower extremity), arterial hypertension, diabetes mellitus (type II) and pituitary adenoma. Computed tomography and magnetic resonance angiography (Fig. 1. Fig. 2) indicated i) bilateral brain infarctions ii) right internal carotid artery (RICA) occlusion iii) left common carotid artery (LCCA) pseudoaneurysm (47mm x 27mm) and iv) left common carotid artery (LCCA) stenosis (near occlusion). After multidisciplinary assessment, open surgical therapeutic strategy was decided. We performed an incision supraclavicular to maintain proximal control of CCA. With a second incision, we proceeded to LECA and LICA dissection for distal control. We also recognized nerves (hypoglossal, vagus, ANSA) and sacrificed the latter one. Finally, we performed a bypass from LCCA TO LICA using ringed PTFE (6mm) (Fig 3.) with ligation of LECA, debridement, no use of shunt and clamping time of thirty-five minutes. Tissue culture did not reveal any microorganism. The patient was discharged five days later, and he remains in good health six months after the operation.

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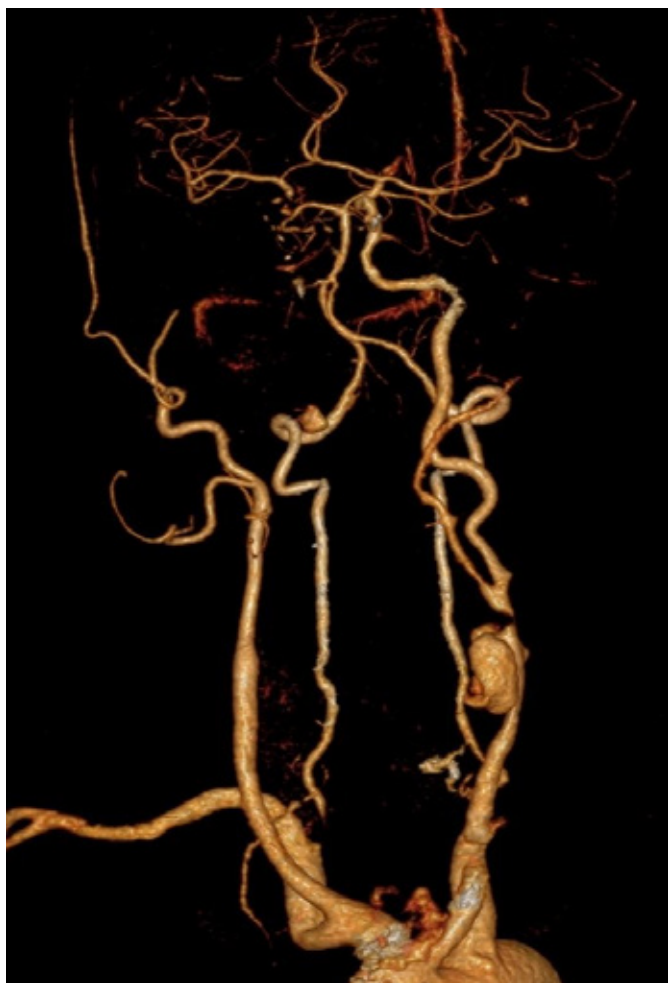


Figure 1. 3D reconstruction of computed tomography angiography. The aneurysm is arising from CCA. Also note the near occlusion stenosis at the carotid bifurcation.

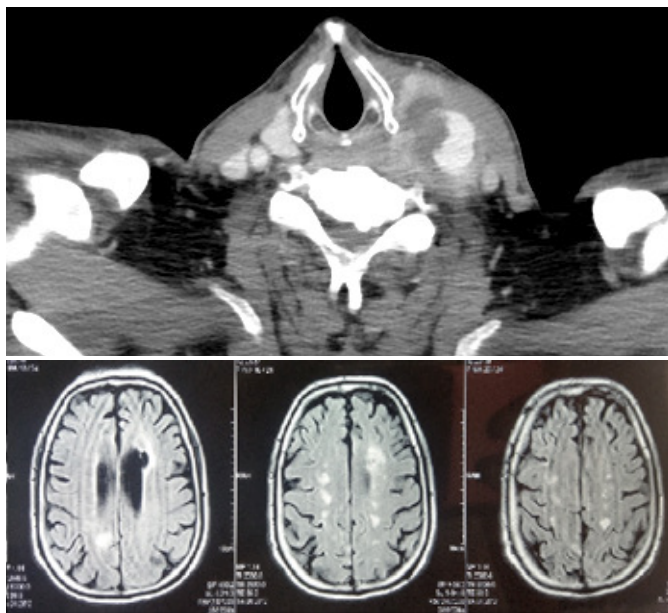


Figure 2. A computed tomography angiography revealing the pseudoaneurysm with the thrombus in it and magnetic resonance of the brain indicating bilateral brain infarctions.

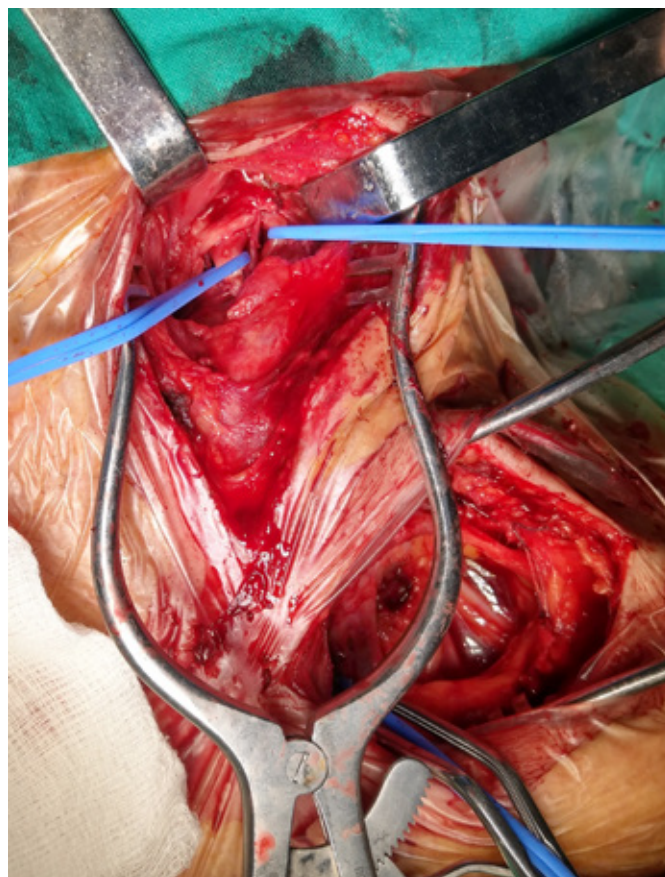


Figure 3. Intraoperative figure. One incision for the proximal control of CCA and the other incision for distal control of ICA. It can be partially seen the perivascular hematoma/fibrosis.

DISCUSSION

Carotid artery aneurysm may remain asymptomatic. Other symptoms include pulsatile mass, hoarseness, dysphagia, stroke, and hemorrhage.^{2,3,5} High index of suspicion and thorough clinical examination is required. Differential diagnosis includes cervical tumors (carotid body tumors, metastatic disease, glomus jugulare tumors), hygromas, cervical lymph nodes. Initial diagnostic modality is usually the duplex ultrasonography. Computer tomography angiography and magnetic resonance angiography can be utilized to confirm the diagnosis and make the therapeutic plan.

Pseudoaneurysm of carotid artery could present as early or late iatrogenic complication (head and neck surgery, radiotherapy, insertion of CVC).^{5,6} We estimate that an inadvertent carotid artery puncture during central venous catheter (CVC) placement in a previous admission was the initial cause of the pseudoaneurysm formation. A carotid artery injury, an inadequate vascular access site management at that time and anti-thrombotic and antiplatelet therapy intake, led to pseudoaneurysm formation. The patient noticed a gradually increasing cervical mass. It is also possible that the same level fall exacerbated the process for emboli dislodgement which eventually led to stroke. However, this is just a speculation and it cannot be alleged as the mechanism that led to stroke.

Regarding therapy, there are still no evidenced-based guidelines for the treatment of either true or false carotid aneurysm. A research team from UMC Utrecht initiate an online registry for carotid aneurysms (<http://www.carotidaneurysm-registry.com/en/home>) which will assist in generating more results in pathogenesis and management of carotid aneurysms¹. Generally, endovascular approach is a minimal invasive and acceptable therapy. Brief literature review report as therapy the flow diverter stents, covered stents, bare metal stents (closed cells) and stent assisted coiling.⁴ However, we excluded endovascular therapy because there was a significant amount of thrombus in the aneurysm sac besides the severe stenosis of carotid bifurcation. In addition, the considerable mismatch of ICA and CCA, the concomitant stenosis and the large amount of thrombus burden the endovascular approach. On the other hand, we realized that open therapy was associated with a significant risk for complications. Myocardial infarction, stroke and death are the most common in carotid artery revascularization. In this patient the risk for cranial nerve injury and wound healing was apparent. Taking in mind the pros and cons we decided to proceed to open surgical repair with rewarding results.

CONCLUSION

Pseudoaneurysm of carotid artery could present as (early or late) iatrogenic complication (head and neck surgery, radiotherapy, insertion of CVC), as a result of tumor formation or after infection. Its progression to carotid blowout syndrome is the most feared complication. However, another devastating complication is a major stroke. A meticulous preoperative planning is essential to decide on the proper management for each case. While endovascular therapy is attractive, open surgical repair remains a challenging but winning proposal.

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