

Ruptured Aneurysm of Extracranial Carotid Artery

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ABSTRACT

Aneurysm of extracranial carotid artery is an uncommon clinical disease and that presenting as a ruptured aneurysm is extremely rare. This entity represents a challenge to treatment strategy. A 54 year old hypertensive male presented with painful, pulsatile mass in left neck. Duplex scan revealed the ruptured left carotid artery at its bifurcation. Angiogram depicted clear picture of ruptured carotid artery aneurysm. Resection of aneurysm was performed with placement of external carotid shunt. Continuity was maintained with interposition of Dacron graft.

Key words: aneurysm, angiography, carotid artery, dacron graft

INTRODUCTION

Aneurysm of the carotid artery is an uncommon clinical entity which can occur as the result of atherosclerotic degeneration, fibromuscular dysplasia or trauma.¹ Four percent of all peripheral artery aneurysms are reported to be extracranial carotid artery (ECCA).² Because of the risk of aneurysm rupture as well as neurological sequelae caused by cerebral embolism, surgical intervention is recommended for a carotid artery aneurysm in order to minimize potential complications. Ruptured aneurysms make surgery more difficult.

A variety of surgical techniques have been described in the treatment of ECCA. Sir Astley Cooper reported successful treatment of ECCA by proximal carotid artery ligation in 1808.³ Subsequently, Dimtza performed first successful resection and reestablished the continuity of carotid artery in 1956.⁴ Operative repair of ECCA often represents a significant challenge to surgeons when it

has already ruptured with extensive inflammation in the surrounding tissues. Recently, endovascular surgery is emerging as treatment modality for arterial aneurysmal diseases.

CASE REPORT

A 54 year male was presented with painful and pulsatile left cervical mass. It had suddenly increased in size a week back. The patient had not undergone head and neck surgery and there was no history of trauma. He was a non-smoker but was hypertensive and not on medication. Physical examination revealed left neck pulsatile mass of 10x8 cm in size [Figure 1]. Bruit over the mass was heard. He had left sided Horner's syndrome.

Results of routine blood tests were not significant. Duplex scan depicted the mass with blood leaking outside the carotid artery at its bifurcation. The mass

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was filled up with clot. Angiogram revealed a clear picture of ruptured left carotid aneurysm [Figure 2].

After controlling blood pressure (BP) with medication he underwent surgery. After exposing common carotid and internal carotid artery, the stump pressure of internal carotid was measured. The pressure recorded was only 40 mm Hg, so it was decided to keep carotid shunt before excising aneurysm. Common carotid artery and internal carotid artery in the neck were clamped after establishing an external carotid shunt (Pruitt Inahara shunt) [Figure 3]. The external carotid artery was ligated. There was ruptured true aneurysm with around 2 cm neck with ruptured sac. The neck swelling contained clot. About 5 cm of common carotid to internal carotid artery was excised and interposed with 6 mm Dacron graft [Figure 4]. Post operatively he was noted to have injury of cervical branch of facial nerve. Patient went home with no other postoperative neurological deficit. Follow up after three months showed improvement in Horner's syndrome but had signs of cervical facial nerve injury.



Figure 1. Left neck pulsatile mass measuring 10 cm x 8 cm. The mass is almost occupying whole neck.



Figure 2. Angiogram depicting aneurysm at the level of carotid bifurcation.

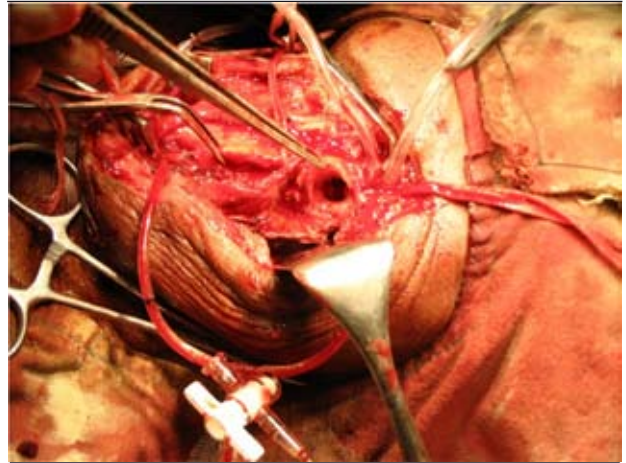


Figure 3. Wall of ruptured true aneurysm (curved arrow). Pruitt-Inahara shunt (straight arrow).



Figure 4. Dacron graft interposing common carotid and internal carotid arteries. (Arrow head)

DISCUSSION

Aneurysms of cervical carotid arteries are rare, particularly in comparison with the frequency of aneurysms involving the intracranial carotid arteries and their branches and the frequency of aneurysms that occur throughout the rest of the arterial system. McCollum and associates at Baylor University reported 37 aneurysms treated over 21-year period during which approximately 8500 operations for arterial aneurysms at another step were performed in the same institution.⁵ Because of rarity of these aneurysms, it is impossible to define their true incidence; however, with the widespread use of angiography, duplex ultrasound, and other imaging modalities, they clearly are being recognized more often than before. Rupture of such aneurysm is even rare.

The ECCA, particularly at its bifurcation, is the most frequently reported site of the true aneurysm formation in the extracranial carotid system, whereas the internal carotid artery is the next most common site.⁶

Atherosclerosis is now the most frequently reported pathological process associated with extracranial carotid artery aneurysm, occurring in up to 70% if the aneurysm in some published series.⁷ Most affected patients have severe hypertension.

The preferred modality of treatment is by resection of the aneurysm and restoration of arterial continuity, unfortunately, achieving the goal is not always possible.⁸ The subsequent development of reconstructive vascular techniques has eliminated ligation as a procedure of choice. Intraoperative measurement of the back pressure (stump) in the temporarily occluded internal carotid artery has been shown by several authors to be an excellent predictor of tolerance of temporary carotid

occlusion in patients with occlusive disease, and it can be applied similarly to patients with aneurysms. A carotid back pressure in excess of 70 mm Hg suggests the presence of sufficient collateral cerebral perfusion to enable a patient to withstand carotid ligation without development of an ischemic neurologic deficit. Routine shunting is advocated by many surgeons because of the longer time required for this type of carotid reconstruction compared to that required for endarterectomy.⁹ The recent development of endovascular techniques and technologies has permitted successful treatment with maintenance of patency of even the most challenging distal as well as proximal carotid aneurysms.¹⁰

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