

# Endovascular Management of a Rare Case of a True Facial Artery Aneurysm: A Case Report

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## Abstract

True aneurysms of the facial artery are rare and their management protocol is not defined. There are only eight cases reported in the literature. Here we report a case of true aneurysm of the facial artery in a 78 years old female. She presented with swelling left side of the neck who underwent further imaging including CT angiography which revealed an aneurysm of left facial artery. She was successfully treated with coiling.

## Keywords

Facial artery, Endovascular, True aneurysm

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## INTRODUCTION

True aneurysms involving the extracranial head and neck vessels are rare and most often involve the superficial temporal and facial artery.<sup>1,2</sup> Majority of extracranial lesions are classified as false aneurysms and are sequelae of trauma. Facial artery involvement in true aneurysms is rarer with only eight cases reported in literature so far.<sup>2,3,5-9</sup> In this article, we describe a rare case of true aneurysm of the facial artery which was managed at our centre by endovascular approach.

## CASE REPORT

A 78 years old female, non-smoker, known case of coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD) and hypertension presented with history of neck swelling on left side of five months duration. There was no history of trauma or any surgical procedure in head and neck region. There was no history

of any sudden increase or decrease in size of the swelling. It was associated with occasional pain which was distressing to the patient. Local examination revealed a 4 x 4 cm, pulsatile swelling in the left submandibular region which was non tender, globular with smooth surface. No palpable thrill or bruit was present. Intra oral examination was normal. The colour doppler showed a 3.5 cm x 3 cm aneurysm of left facial artery with turbulent flow and absent Yin Yang sign. There was no wall calcification. Left facial artery could not be traced completely. Further evaluation by CT angiography revealed a 30 mm x 27 mm x 38 mm (AP x TR x CC) saccular outpouching from the facial branch of left external carotid artery. Contrast was seen within, with thrombus in the peripheral rim of the aneurysmal sac. There was no venous filling. Posteriorly, it was compressing the left internal jugular vein with maintained flow within (Fig 1 & 2). Echocardiogram of

patient showed left ventricular ejection fraction of 40% with hypokinesia of inferolateral wall and without valvular regurgitation or clot.

Due to high risk for general anaesthesia, hybrid management was not possible and thus patient was planned for endovascular intervention under local anaesthesia. The right common femoral artery access was used, which was punctured under ultrasound guidance. A 6 F sheath was introduced over guidewire. The left common carotid artery was cannulated using 0.035 Terumo wire and vertebral catheter and wire was parked in left external carotid artery. The sheath was exchanged with 7 F shuttle sheath over a stiff wire and angiogram was done in different planes to define the aneurysm. Coiling of the aneurysm was done using two 35 X 15 X 20 and one 35 X 8 X 15 PTFE coil (Fig 3a). The completion angiography showed decreased flow in the aneurysmal sac with partial thrombosis (Fig 3b). There was no bruit after the procedure. There were no access site complications. She was discharged on second post-operative day. The patient was followed up every two weeks. She reported symptomatic improvement with decrease in pain and size of the swelling. The serial color doppler examination showed complete thrombosis of the aneurysm sac at three months. At one year follow up, the patient was asymptomatic with complete obliteration of aneurysm sac and clinical disappearance of the swelling.

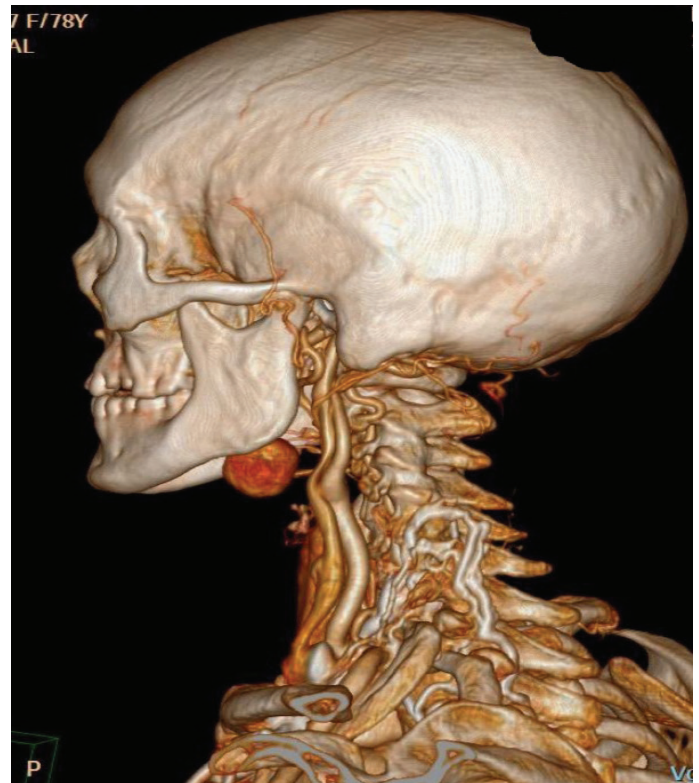


Figure 2. 3D reconstructed image demonstrating the aneurysm

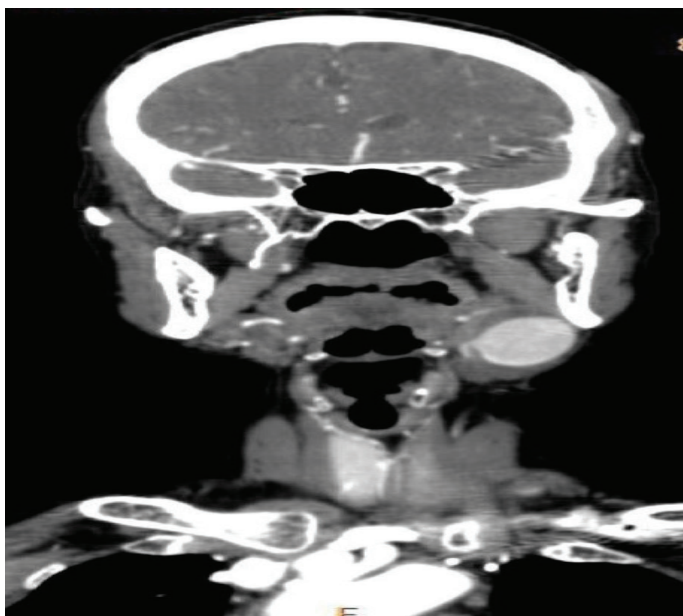


Figure 1. CT Angiography with coronal reconstruction depicting a saccular aneurysm arising from the facial branch of left external carotid artery

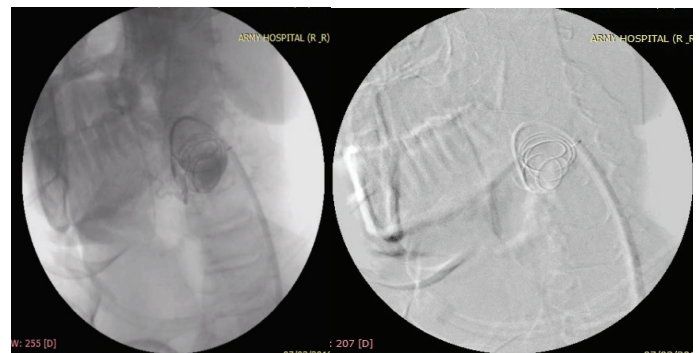


Figure 3 (a)

Figure 3 (b)

Figure 3 (a) Coiling of the Aneurysm cavity with two 35 X 15 X 20 and one 35 X 8 X 15 coil (b) Fig 6: Completion Angiogram with diagnostic catheter in the Facial Artery showing partial opacification of the aneurysm with coils in situ with patency of the collateral

**DISCUSSION**

Aneurysms arising from facial artery usually present as a soft, compressible and pulsatile mass in the anterior triangle of neck. Only eight cases have been documented in the literature so far, out of which only two patients underwent endovascular intervention. The mean size of these aneurysms ranged from 1 to 5 cm, the mean

age of patients was 70 years and only eight cases had history of cardiovascular disease. The male: female ratio was 5:3 indicating almost equal incidence among both the sexes.<sup>2,3,5-9</sup> In our case, we had a similar demographic profile but our patient had coronary artery disease, hypertension and pulmonary involvement.

Doppler ultrasonography is considered a useful tool due to its non-invasive nature and as facial artery is superficial in its anatomic course, its detection becomes relatively easier.<sup>2,3</sup> It can also rule out wall calcifications, pseudoaneurysms and AV fistulae. However, we resorted to CT angiogram as an evaluation tool to define the exact anatomy of the facial artery as we had initially planned for a hybrid approach and as we could not trace the facial artery completely by doppler.

The treatment of aneurysms involves various documented procedures including ligation, surgical excision, embolization and hybrid approach. The surgical excision has been advocated with risk of potential injuries to the facial nerve during dissection. Five out of the eight reported cases were managed by surgical excision alone, however no report of any injury to the facial nerve has been documented. Collin et al<sup>6</sup> reported spontaneous resolution of a 3 cm size facial artery aneurysm in a 78 years old man, who presented with swelling in left cheek. No further details were available to the reason for conservative management. No other documented case has been managed conservatively. Kiernan et al<sup>7</sup> reported excision of the aneurysm using facial nerve monitoring with excellent results.

The endovascular intervention has remained limited to management of false aneurysms. Setacci F et al<sup>8</sup> first reported coil embolization in a patient with a large true aneurysm of the facial artery which was close to the parotid gland, to avoid potential facial nerve injury during surgical dissection. Nakagawa et al<sup>9</sup> reported the first hybrid approach in a 79 years old woman with a huge true aneurysm of the right facial artery. They treated the patient using endovascular internal trapping using coils followed by surgical excision after eight days.

Our case is only the second case in literature for pure endovascular management of a true facial artery aneurysm. The decision to intervene was made as the patient was symptomatic. She was planned for surgical excision / hybrid approach, however her preoperative assessment deemed her high risk for general anaesthesia in view of her cardiac and respiratory status. Thus, an endovascular approach under local anaesthesia was performed with good result.

## CONCLUSIONS

True aneurysms of Facial artery are very rare. Clinical examination along with colour doppler usually clinches the diagnosis but CT angiography is a better diagnostic and evaluation tool as it can delineate the exact anatomy. Endovascular approach either in isolation or associated with hybrid approach holds promise due to its minimal invasive nature, however more cases need to be done to have a defined role.

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