

Urgent treatment of spontaneous carotid artery pseudoaneurysm with covered stent graft: A case report

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ABSTRACT

Pseudoaneurysms usually occur due to blunt trauma to the atherosclerotic vessels. The main pathophysiology is the disruption of the vessel wall and subsequent collection of the blood under adventitia and surrounding tissues. The localization of the lesion is determinant for the severity of the clinical presentation. Herein, we present a 64-year-old male case in whom Doppler ultrasound revealed a carotid artery pseudoaneurysm treated with endovascular method using a covered stent graft.

Keywords: Carotid artery pseudoaneurysm; covered stent graft; endovascular treatment.

After the arterial wall injury which causes extravasation of the blood the damaged arterial wall is covered with a pseudocapsule defined as a pseudoaneurysm. Following the arterial wall disruption, hematoma or pseudoaneurysm formation occurs due to the arterial pressure. Although carotid pseudoaneurysms are rarely seen, they can cause catastrophic complications. In addition to the hemorrhagic and neurological effects, serious dyspnea may occur due to the mass effect of the pseudoaneurysm, such as the deviation of the trachea, and urgent intubation is required in such cases.

In this article, we present a case with a spontaneous left common carotid artery pseudoaneurysm with an expanding hematoma treated with an endovascular stent graft in the emergency setting.

CASE REPORT

A 64-year-old male patient was admitted to the Eviya Çelebi Training and Research Hospital with dyspnea and neck pain for two days. On his physical examination, there was edema, hyperemia, and a pulsatile mass on the left side of the neck.

Respiratory rate was 18 per min, the arterial blood pressure was 220/130 mmHg, and the heart rate was 110 bpm. The Glasgow Coma Scale score was 12 (eye: 3, verbal: 4, motor: 5). There was a left carotid artery pseudoaneurysm detected with color Doppler ultrasonography. The patient was hospitalized and antihypertensive therapy was arranged. Right-sided central venous catheterization was applied. Although surgery was the first-line treatment of choice, clamping was not appropriate, as the mass grew rapidly in hours. Therefore, the patient was prepared for the endovascular treatment and transferred to the angiography laboratory. The right femoral artery was cannulated with a 7 French (F) sheath under local anesthesia and 5000 IU of heparin injected by this way. The common carotid artery was cannulated with a 0.18 guidewire and a 6F right coronary catheter. An 8×7-cm pseudoaneurysm was diagnosed at the pre-bifurcation of the internal and external carotid artery (Figure 1). An 8×59-mm covered stent graft (Atrium Advanta balloon expandable covered stent, USA) was implanted from the common carotid artery to the left internal carotid artery (Figure 2). The external carotid artery was also occluded with the

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Figure 1. Angiographic view of pseudoaneurysm.



Figure 2. Treatment of pseudoaneurysm with covered stent graft.

covered stent graft due to the lesion localization. The patient was followed in the intensive care unit for one day and he was discharged on Day 4 without any neurological or vascular complications with daily acetylsalicylic acid 100 mg and clopidogrel 75 mg.

DISCUSSION

Carotid artery pseudoaneurysms are very rarely seen. The major causes are atherosclerosis,^[1] congenital connective tissue disease, and traumas.^[2] In certain cases, carotid artery endarterectomy operation may also cause pseudoaneurysm formation^[2,3] as a result of suture line corruption.^[1] Arteritis, infection, arterial intimal degeneration, irradiation are the other causes.^[1,4] Carotid artery pseudoaneurysms are mostly located between the internal carotid artery and the common carotid artery,^[4] although there is a limited number of data about why it is most often seen at this level. As there is an increased risk of rupture and neurological complications for carotid artery pseudoaneurysms, they should be treated immediately.^[4]

The treatment modalities are open surgery and endovascular therapy. Primary repair of the pseudoaneurysm or using a patch for the repair are the open surgical techniques. Open surgery is the traditional treatment modality^[5] and is curative; however, exploring the pseudoaneurysm and clamping the responsible artery may be sometimes challenging. In particular, the risk of hemorrhage cannot be ruled out.^[5] Also, the cranial nerve

injuries, usually of the IX, X, XII nerves, are some of the other serious complications which may occur during open surgery.^[6]

Recent studies demonstrate that endovascular treatment is less invasive and can be life-saving.^[5,7] For the complex lesions, endovascular treatment provide a relatively low risk and is as effective as open surgery.^[8] A systematic review of 113 studies with 224 patients reported the midterm results for stroke, cranial nerve injury, and mortality rates as 1.8%, 0.5%, and 4.1% respectively with endovascular treatment.^[6]

In conclusion, endovascular treatment is technically feasible, suitable and favorable with a high procedure success. As the present case was admitted with giant neck swelling and short neck, open surgery would be difficult and we preferred endovascular treatment. We believe that we make the right choice based on the health status of the patient and in the light of current literature data.

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