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CLINICAL CASE

# Surgical management of internal carotid artery aneurysm near the skull base

## *Prise en charge chirurgicale d'un anévrysme de l'artère carotide interne près de la base du crâne*

**Hèla Ben Jmaà[a,*], Amal Lagha[a], Abdellaziz Diope[a], Fatma Jarraya[b], Bouthaina Bouchech[b], Sayda Masmoudi[a], Tahia Boudawara[c], Nizar Elleuch[a], Imed Frikha[a]**

[a] *Department of cardiovascular and thoracic surgery, Habib Bourguiba hospital, 3029 Sfax, Tunisia*
[b] *Department of anesthesiology, Habib Bourguiba hospital, Sfax, Tunisia*
[c] *Department of anatomopathology, Habib Bourguiba hospital, Sfax, Tunisia*

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**Summary** Extracranial carotid artery aneurysms are rare. The most common location is the common carotid artery near the bifurcation. The mid to distal internal carotid artery is the second most common location. We are reporting the case of a 64-year-old woman who was admitted to our department for management of an asymptomatic left internal carotid artery aneurysm. Physical examination revealed a pulsatile mass, and imaging confirmed the aneurysm diagnosis. Computed tomography angiography detailed a 28 mm × 3 cm × 6 cm aneurysm of the left cervical internal carotid artery with tortuous outflow the aneurysm sac. Open repair was undertaken. Exposure with incision anterior to the sternocleidomastoid was performed although extended more superiorly than usual because of the distal aneurysm location. After carotid clamping, the aneurysm was resected and an end-to-end anastomosis with prosthesis was performed. After closure, the patient was extubated demonstrating baseline neurologic function. Histologic examination of the arterial wall confirmed the diagnosis of fibromuscular dysplasia.


* Corresponding author.
*E-mail address:* helabenjemaa2015@gmail.com (H. Ben Jmaà).

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**MOTS CLÉS**
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**Résumé** Les anévrysmes de l'artère carotide extracrânienne sont rares. La localisation la plus fréquente est la carotide commune près de la bifurcation. L'artère carotide interne moyenne à distale est la deuxième localisation la plus fréquente. Nous rapportons le cas d'une femme de 64 ans admise dans notre service pour la prise en charge d'un anévryme de l'artère carotide interne gauche asymptomatique sur le plan neurologique. L'examen physique a révélé une masse pulsatile et l'imagerie a confirmé le diagnostic d'anévrysme carotidien. L'angioscanner a mis en évidence un anévrysme de 28 mm × 3 cm × 6 cm de l'artère carotide interne distale extracrânienne gauche avec tortuosité à la sortie du sac anévrysmal. Une prise en charge chirurgicale a été réalisée par une exposition en regard du sternocléidomastoïdien, bien que l'incision ait été prolongée plus haut en raison de la localisation distale de l'anévrysme. Après clampage de la carotide, l'anévrysme a été réséqué et une anastomose termino-terminale prothétique a été réalisée. L'intervention s'est déroulée sans complication neurologique. L'examen histologique de la paroi artérielle a confirmé le diagnostic de dysplasie fibromusculaire.


## Introduction

Extracranial carotid artery aneurysms are rare [1]. Most of them are asymptomatic. They may lead to neurologic symptoms including transient ischemic attacks or ischemic stroke [2].

Traditional surgical treatment consists of open resection of the entire aneurysm with or without arterial replacement with interposition of a graft.

In distally located extracranial carotid artery aneurysms just below the base of the skull, an extensive dissection is needed to perform complete surgical aneurysm resection. So, endovascular therapy may be beneficial [1]. But, tortuosity in the carotid arteries is not favourable to endovascular exclusion.

We are presenting the case of a 64-year-old woman with an asymptomatic fusiform aneurysm in the distal internal carotid artery treated surgically.

## Case report

A 64-year-old woman was admitted for swelling in the cervical region without neck pain or headache.

She was without cardiovascular risk factors and events. She was a non-smoker.

Clinical examination showed a pulsatile mass in the left side of the neck. No neurologic symptoms occurred in the patient.

Neurologic examination of the cranial nerves showed no anomalies. A duplex scan was not done.

Computed tomography scan showed a large fusiform aneurysm of the left internal carotid artery. The aneurysm measurements were 28 mm by 30 mm, with a cranial-caudal length of 60 mm and a wide neck located near the base of the skull (Figs. 1, 2 and 3). The aneurysm extended from 2 cm after the carotid bifurcation nearly to the base of the skull.

Biological analyses showed no inflammatory syndrome.

Because of the tortuosity of the aneurysm, endovascular exclusion was not possible. Surgery was performed in spite of its distal location.

The procedure was performed under general anesthesia through an incision in the neck along the anterior border of the sterno-cleido-mastoid muscle extended more superiorly than usual because of the distal aneurysm location.

After dissection of the common carotid artery and the internal carotid artery, the distal end of the extracranial internal carotid artery was exposed by transecting the digastric muscle. The vagus, accessory and hypoglossal nerves were all identified and preserved.

After systemic heparinisation (30 mg), the internal carotid artery was clamped into the extremities of the aneurysm. The aneurysm was resected and a PTFE prosthetic graft of 6 mm of diameter was anastomosed to the proximal and distal neck (Figs. 4 and 5).

The arterial wall was not atherosclerotic and there was no thrombus (Fig. 6).

An intra-operative angiogram was not performed because we don't have this investigation in our institution.

After the intervention, the patient was extubated. Her postoperative recovery was uneventful without neurologic dysfunction. Postoperative neurologic examination was without anomalies.

The patient received antiplatelet and curative heparin in the immediate postoperative period. Then, after discharge from hospital, she was only given antiplatelet treatment.

The duration of stay in the intensive care unit was 24 hours. The patient was discharged on the third postoperative day.

Surgical pathology of the specimen confirmed the intimal fibromuscular dysplasia etiology of the aneurysm.

The follow-up of the patient is 4 months. She is asymptomatic.

Duplex of the renal arteries showed no stenosis.