

A novel treatment approach for common carotid artery bifurcation aneurysms

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Introduction

An aneurysm involved in common carotid artery (CCA) bifurcation is a rare clinical condition. There are not enough natural follow-up data, and there is no evidence-based treatment algorithm [1]. An endovascular approach is used to treat CCA bifurcation aneurysms, as it offers some advantages in selected patient populations; nonetheless, closure of the aneurysmal segment in CCA bifurcation using a graft stent has some challenges, mainly occluding the ostial part of the external carotid artery (ECA). Coil embolization of a CCA bifurcation aneurysm is preferred over graft stent implantation in this condition; however, coil embolization cannot provide appropriate treatment in patients suffering from a CCA bifurcation aneurysm with significant stenosis in the proximal part of the internal carotid artery (ICA).

Herein, we present a male patient whose CCA bifurcation aneurysm with significant stenosis in the proximal part of the ipsilateral ICA was successfully treated with the implantation of two nested self-expandable closed-cell stents.

Case report

A 54-year-old hypertensive male patient was admitted to our clinic due to recurrent episodes of transient ischemic attack in the last 3 months. His carotid angiography revealed a right-sided CCA bifurcation aneurysm with 50–60% stenosis in the proximal part of the ICA (Figure 1 A). Due to the possibility of occluding the ostial part of the right ECA if we close the aneurysmal segment with a graft stent, we preferred to close the aneurysmal segment by implanting two nested self-expandable closed-cell stents. The patient had already been on 100 mg/day aspirin for 2 months and received a 300 mg loading dose of clopidogrel the day before the procedure. A written informed consent form was provided before the procedure.

A 40 × 8–6 mm Xact stent (Abbott Vascular, USA) was implanted successfully after the Emboshield NAV6 Embolic Protection System (Abbott Vascular, USA) had been placed distally to the target lesion (Figure 1 B). However, we observed that the CCA bifurcation aneurysm persisted after stent implantation (Figure 1 C). Therefore, a 30 × 7 mm Xact stent (Abbott Vascular, USA) was implanted inside the first stent. The final carotid injection showed that the aneurysm was substantially closed (Figure 1 D). After the procedure, a combination of clopidogrel 75 mg/day and aspirin 100 mg/day was planned for 2 months and aspirin 100 mg/day indefinitely. The patient was scheduled for control CT angiography 3 months later to check the stent appositions, the patency of the vessel and the exclusion of the aneurysm.

Discussion

There are limited data available in the literature about the optimal treatment method of CCA bifurcation aneurysms. Recently, Welleweerd *et al.* started a registry to address diagnostic and therapeutic questions about the management of extracranial carotid artery aneurysms [1]. Alternative treatment options other than surgical resection, mainly endovascular treatment, have been debated in the last few years [2, 3]. Due to the concomitance of significant stenosis in the proximal part of the ICA with a CCA bifurcation aneurysm and the unsuitability of closing it with a graft stent, in this case we treated the CCA bifurcation aneurysm with the implantation of two nested self-expandable closed-cell stents. The final carotid injection showed a satisfactory result.

Conclusions

Coil embolization of CCA bifurcation aneurysms cannot provide sufficient treatment in patients suffering from a CCA bifurcation aneurysm with significant steno-

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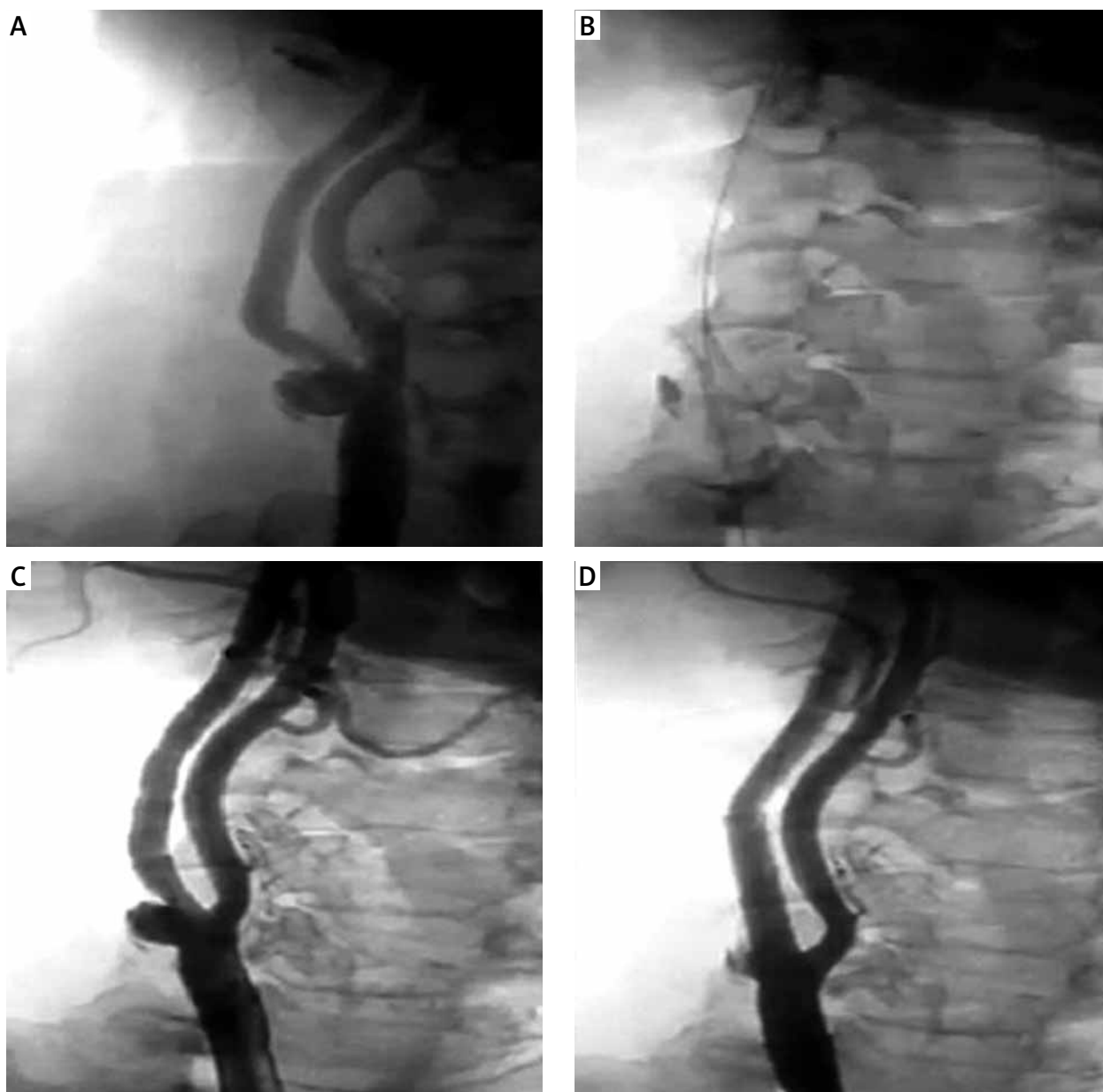


Figure 1. **A** – Angiographic view of a right-sided common carotid artery (CCA) bifurcation aneurysm with 50–60% stenosis in the proximal part of the internal carotid artery (ICA). **B** – Deployment of the first Xact (Abbott Vascular, USA) self-expandable closed-cell stent. **C** – Persistence of the CCA aneurysm after implantation of the first stent. **D** – Final carotid injection showing substantial closure of the CCA bifurcation aneurysm after deployment of the second Xact (Abbott Vascular, USA) self-expandable closed-cell stent

sis in the proximal part of the ipsilateral ICA. Therefore, we suggest deploying two nested self-expandable closed-cell stents as an alternative method for the treatment of CCA bifurcation aneurysms, particularly if accompanied by significant stenosis in the proximal part of the ipsilateral ICA.

Conflict of interest

The authors declare no conflict of interest.

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