

Introduction

Vertebral artery (VA) stenosis can lead to recurrent posterior circulation transient ischemic attacks and strokes. Stenting is often used for symptomatic VA stenosis. As with carotid stenting, embolic protection devices (EPD) are increasingly used when stenting the proximal VA. EPDs can become lost in the circulation during stenting for different reasons. We report the only known case and treatment strategy for an irretrievable EPD during VA stenting.

Methods

A 77-year-old male with magnetic resonance angiography (MRA) suggestive of left VA stenosis underwent left vertebral angioplasty. An EPD was used but retrieval with both shapeable and low-profile retrievers was unsuccessful. Since there are no known reported cases of an irretrievable EPD in the VA, a systematic review of the medical literature was performed to search for irretrievable EPDs in the carotid artery.

Results

A total of four cases were found where an EPD was lost in the carotid circulation. In two of the cases, a carotid arteriotomy was required to retrieve the EPD, while the other two cases used an endovascular approach. In our case, an endovascular biliary stent was used to flatten and permanently implant the irretrievable EPD against the VA wall.

Conclusions

Irretrievable EPD's remain a challenge in endovascular neurosurgery due in part to nearby acutely branching vessels, severe vascular stenosis, and vessel angulation at the stent margin were shown to impair the ability to retrieve the EPD. In conclusion, compressing a lost VA EPD using an oversized self-expanding biliary stent can successfully restore robust blood flow, especially in areas not readily accessible to open surgical techniques.

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Recognize the complications that may occur in vertebral artery angioplasty and use of assisting devices.
- 2) Recognize the mechanism of irretrievable embolic protection devices.
- 3) Identify a method of biliary self-expanding stent use that may prevent future complications of an irretrievable embolic protection device.

References

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