PICA-PICA Bypass and Trapping for a Giant Partially Thrombosed Serpentine Fusiform right PICA Aneurysm

Turki Elarjani, MD; Adib Abla, MD
University of Miami, Department of Neurological Surgery

Abstract

PICA aneurysms are uncommon with their giant variant as rare pathologies. They could be erroneously mistaken for a tumor given their size.

We present a case of a giant, partially thrombosed fusiform PICA aneurysm of the lateral medullary to tonsillomedullary segments of the PICA. Given the high risk of stroke in endovascular treatment, the patient underwent trapping and PICA-PICA bypass that was uneventful.

We delineate the rationale and technique in treating similar aneurysm location and configuration.

Introduction

Vertebrobasilar aneurysms are an uncommon location of aneurysms and constitutes 10-15% of all intracranial aneurysms.[1] The most common posterior circulation aneurysm locations is the basilar bifurcation and PICA.[2]

The PICA has important brainstem perforators in its proximal three segments with a tortuous course. This configuration complicates treatment and leads to high stroke rate if treated endovascularly. Therefore, surgical indications for treating such lesions remains present despite the advancement in endovascular technologies.

Case Report

The patient is a 58-year-old healthy female, with no significant past medical or family history, complained of a 6-week generalized headache. There were no associated symptoms with the headache. Her Primary care physician ordered a CT that showed a mass at the right cerebellomedullary angle.

She was referred to us, and an MRI revealed medullary compression from the mass (Figure 1). Therefore, she underwent a diagnostic cerebral angiogram that revealed a right giant, partially thrombosed, serpentine aneurysm of the lateral medullary to tonsillomedullary segments of the PICA (Figure 2).

Given the close proximity to perforators, the patient underwent a right far lateral approach with PICA-PICA side to side bypass followed by trapping of the aneurysm (Figure 3). The postoperative course was uneventful and patient was discharged on postoperative day 3.

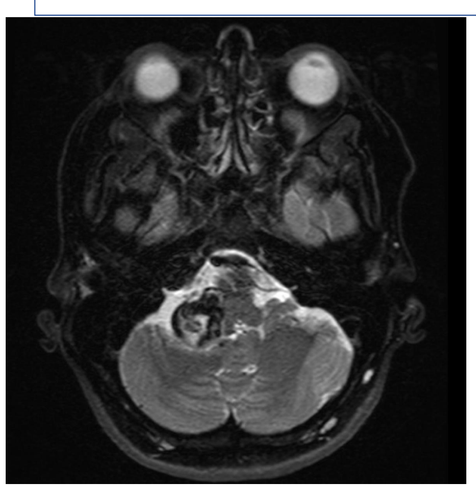

Figure 1. MRI T2-weighted image showing right cerebello-Medullary mass

Figure 2. DSA showing a right giant partially Thrombosed PICA aneurysm

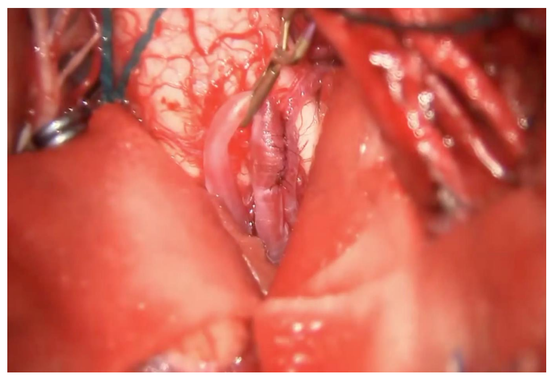

Figure 3. Intraoperative view showing PICA-PICA bypass

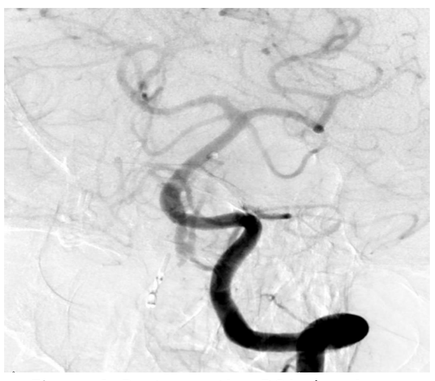

Figure 4. Postoperative DSA showing Complete aneurysm exclusion and bypass patency

Discussion

PICA aneurysms are uncommon and constitutes 3-6% of all intracranial aneurysms.[3] Treating aneurysms in that location can be challenging due to the close proximity of brainstem perforators.

Currently, endovascular technique can be used for distal PICA aneurysms in a form vessel sacrifice (hunterian ligation) at the telovelotonsillar and cortical segments.[4] However, such technique cannot be applied for proximal PICA segment aneurysms.

An alternative technique is to surgically reconstruct the PICA vessel through a bypass and excluding the aneurysm from circulation. Thus, microsurgical options is in demand for similar aneurysms. If left untreated, it has a high mortality with rupture up to 68%.[5]

Conclusion

Proximal PICA aneurysms are challenging to manage with modern endovascular technologies or surgical clipping. It may require reconstruction with bypass to safely clip or trap the aneurysm.

We demonstrate in our case how it can be safely approached and treated with good outcomes.

Contact

[Turki Elarjani
University of Miami, Department of Neurological Surgery
Lois Pope Life Center Building, 1095 NW 14th Ter, 2nd floor, Miami, FL. 33136
Turki.Elarjani@jhsmiami.org
+1 (305)2970545

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