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Video Abstract

Microsurgical treatment for cerebellomesencephalic fissure arteriovenous malformations after multiple sessions of endovascular treatment

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ABSTRACT

Background: Arteriovenous malformations (AVMs) are relatively uncommon congenital vascular anomalies, and only 7–15% of AVMs occur in the posterior fossa. Most posterior fossa AVMs clinically present with hemorrhage and are associated with a high risk of neurological deficits and mortality. These malformations are associated with a high incidence of flow-related aneurysms. Endovascular treatment of infratentorial AVMs is challenging in pediatric patients.

Case Description: We describe an 11-year-old female adolescent with cerebellar syndrome [Video 1], who was diagnosed with a cerebellomesencephalic fissure AVM. We observed a sequential increase in the size of the AVM after multiple sessions of endovascular treatment and performed successful microsurgical resection of the lesion.

Conclusion: This illustrative video highlights the role of microsurgery as a feasible therapeutic strategy for complete resection of cerebellar AVMs after endovascular embolization.

Keywords: Arteriovenous malformation, Cerebrovascular, Microsurgery

[Video 1]-Available on:
www.surgicalneurologyint.com

Annotation[1-7]

1) 0:00 – Title
2) 0:10 – Clinical Presentation
3) 0:33 – Neurological Examination
4) 0:42 – Neuroimage Findings/First Episode de Hemorrhage, CT Scan
5) 0:47 – Neuroimage Findings/First Episode de Hemorrhage

6) 0:55 – Neuroimage Findings/First Angiography
7) 1:19 – Neuroimage Findings/First Embolization
8) 1:28 – Neuroimage Findings/Second Hemorrhage
9) 1:49 – Neuroimage Findings/Second Angiography
10) 2:00 – Neuroimage Findings/Pre and Post Second Embolization
11) 2:09 – Neuroimage Findings/Third Embolization
12) 2:17 – Neuroimage Findings/Final Control of Third Embolization
13) 2:38 – Neuroimage Findings/Preoperative MRI
14) 2:50 – Neuroimage Findings/Preoperative Embolization
15) 2:56 – Neuroimage Findings/Post Embolization
16) 3:05 – Rationale for Procedure
17) 3:10 – Risks of the Procedure and Its Potentials Benefits
18) 3:37 – Alternatives and Why They Were Not Chosen
19) 3:48 – Positioning and Craniotomy
20) 3:57 – Key Surgical Steps
21) 4:12 – Subarachnoid Dissection and Feeding Coagulation, left side
22) 4:39 – Subarachnoid Dissection and Feeding Coagulation, right side
23) 4:54 – Clipping the Vermian Vein
24) 4:57 – Dissecting and Coagulating Tentorial Veins
25) 5:02 – Decompressing the Fourth Ventricle
26) 5:09 – Removal of Nidus and Onyx
27) 5:27 – Final Aspect
28) 5:43 – Disease Background
29) 6:20 – A Brief Review of Clinical and Image Outcome
30) 6:34 – Postoperative MRI
31) 6:42 – Postoperative Angiography
32) 6:51 – References

REFERENCES

1. Batjer H, Samson D. Arteriovenous malformations of the posterior fossa: Clinical presentation, diagnostic evaluation and surgical treatment. Neurosurg Rev. Published online 1986. doi:10.1007/BF01743635
2. Kouznetsov E, Weill A, Ghostine JS, Gentric JC, Raymond J, Roy D. Association between posterior fossa arteriovenous malformations and prenidal aneurysm rupture: Potential impact on management. Neurosurg Focus. Published online 2014. doi:10.3171/2014.6.FOCUS14219
3. Lai LF, Chen JX, Zheng K, *et al*. Posterior fossa brain arteriovenous malformations: Clinical features and outcomes of endovascular embolization, adjuvant microsurgery and radiosurgery. Clin Neuroradiol. Published online 2018. doi:10.1007/s00062-016-0514-3
4. Mpotsaris A, Loehr C, Harati A, Lohmann F, Puchner M, Weber W. Interdisciplinary clinical management of high grade arteriovenous malformations and ruptured flow-related aneurysms in the posterior fossa. Interv Neuroradiol. Published online 2010. doi:10.1177/159101991001600406
5. Perini S. Endovascular treatment of pial AVMs: Technical options, indications and limits in pediatric age patients. In: Journal of Neurosurgical Sciences.; 1997.
6. Robert T, Blanc R, Ciccio G, *et al*. Endovascular treatment of posterior fossa arteriovenous malformations. J Clin Neurosci. Published online 2016. doi:10.1016/j.jocn.2015.05.051
7. Stein KP, Wanke I, Schlamann M, *et al*. Posterior fossa arterio-venous malformations: Current multimodal treatment strategies and results. Neurosurg Rev. Published online 2014. doi:10.1007/s10143-014-0551-9.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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