

Posterior Pontine Cavernous Malformation: Telovelar Resection via a Supracollicular Safe Entry Zone

Daniele Starnoni, Danielle Golub, Amir R Dehdashti

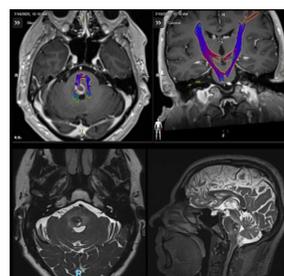
Department of Neurosurgery, North Shore University Hospital, Northwell Health

Clinical Background

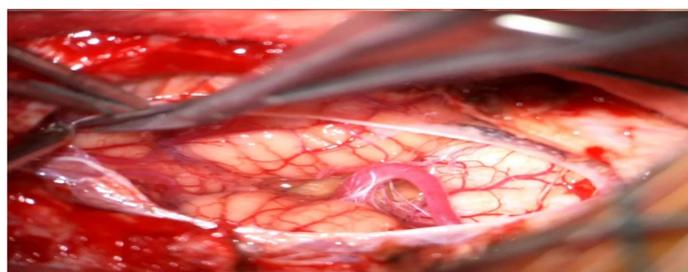
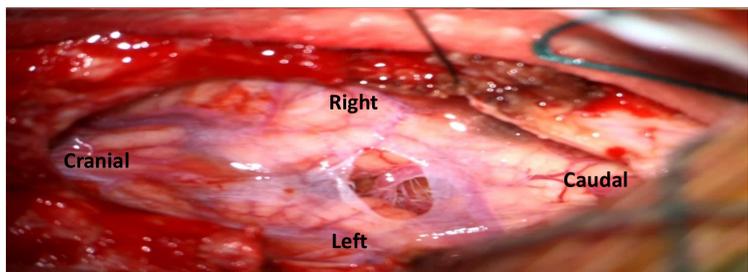
- 60-year-old man with right facial numbness and diplopia
- MRI: 1.5 cm hemorrhagic posterior pontine cavernous malformation
- Exam: right CN VI palsy, facial numbness, preserved motor strength
- Post-hemorrhagic symptoms, clinically stable

Imaging & Surgical Planning

- MRI demonstrated a hemorrhagic posterior pontine cavernous malformation abutting the floor of the fourth ventricle
- Inferolateral displacement of the facial colliculus
- Tractography showed lateral displacement of long projecting fibers
- Surgical corridor planned via unilateral telovelar approach using a supracollicular safe entry zone



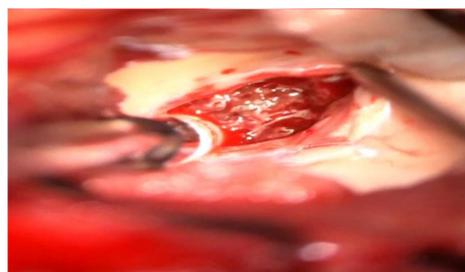
Key Operative Steps



Suboccipital craniotomy with posterior C1 laminectomy → Wide arachnoid dissection of the vallecula → Standard unilateral telovelar approach



Neurophysiological mapping to identify the supracollicular safe entry zone



Blunt dissection of the cavernoma



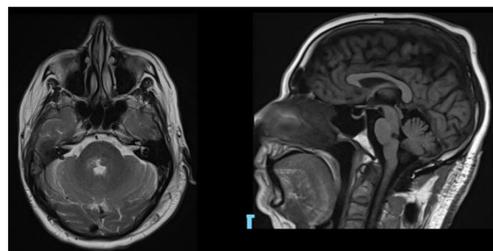
En bloc removal of the CM



Final inspection

Outcome

- Gross-total resection confirmed on postoperative MRI
- No new neurological deficits
- Transient House–Brackmann grade IV facial palsy
- Progressive improvement to grade II at follow-up



Take-Home Points

- Telovelar supracollicular approach provides safe access to posterior pontine cavernomas abutting the fourth ventricle
- Neurophysiological mapping is critical to define safe entry zones in the brainstem
- Careful microsurgical technique allows complete resection with acceptable morbidity

Contact

Daniele Starnoni, MD

North Shore University Hospital
Northwell Institute for Neurology and Neurosurgery
Department of Neurosurgery

300 Community Dr
Manhasset, NY 11030

References

1. Cavalcanti DD, Preul MC, Kalani MY, Spetzler RF. Microsurgical anatomy of safe entry zones to the brainstem. J Neurosurg. 2016 May;124(5):1359-76. doi: 10.3171/2015.4.JNS141945. Epub 2015 Oct 9. PMID: 26452114.
2. Prashant GN, Dehdashti AR. One-Point Technique in Brainstem Cavernous Malformation Surgery: Evaluation of Approaches and Outcomes From a Different Perspective. Oper Neurosurg. 2024 Nov 1;27(5):557-565. doi: 10.1227/ons.0000000000001176. Epub 2024 May 8. PMID: 38717166.
3. Januszewski J, Albert L, Black K, Dehdashti AR. The Usefulness of Diffusion Tensor Imaging and Tractography in Surgery of Brainstem Cavernous Malformations. World Neurosurg. 2016 Sep;93:377-88. doi: 10.1016/j.wneu.2016.06.019. Epub 2016 Jun 14. PMID: 27312394.