Far Lateral Transcondylar Craniotomy for Left Proximal PICA Aneurysm - Cotton Clipping Technique

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Abstract

Proximal posterior inferior cerebellar artery (PICA) aneurysms arising near the vertebral artery–PICA junction represent uncommon but high-risk lesions that propose unique microsurgical challenges due to their deep location along the ventrolateral medulla and their intimate relationship with the lower cranial nerves.

We demonstrate the operative management of a ruptured left proximal PICA blister aneurysm approached through a far lateral transcondylar craniotomy. After dural opening, the aneurysm was encountered along a markedly tortuous lateral medullary segment of the proximal PICA, with intraoperative rupture consistent with fragile blister morphology. Hemostasis was achieved with bipolar coagulation, and a cotton-assisted clipping ("cotton-clipping") technique was employed to reinforce the diseased vessel segment while preserving parent artery patency.

Complete aneurysm obliteration was achieved with maintained flow through the proximal PICA. The patient recovered without new neurological deficit or lower cranial nerve dysfunction. This case underscores the value of the far lateral transcondylar approach and cotton-clipping as an adjunct for securing complex ruptured proximal PICA aneurysms.

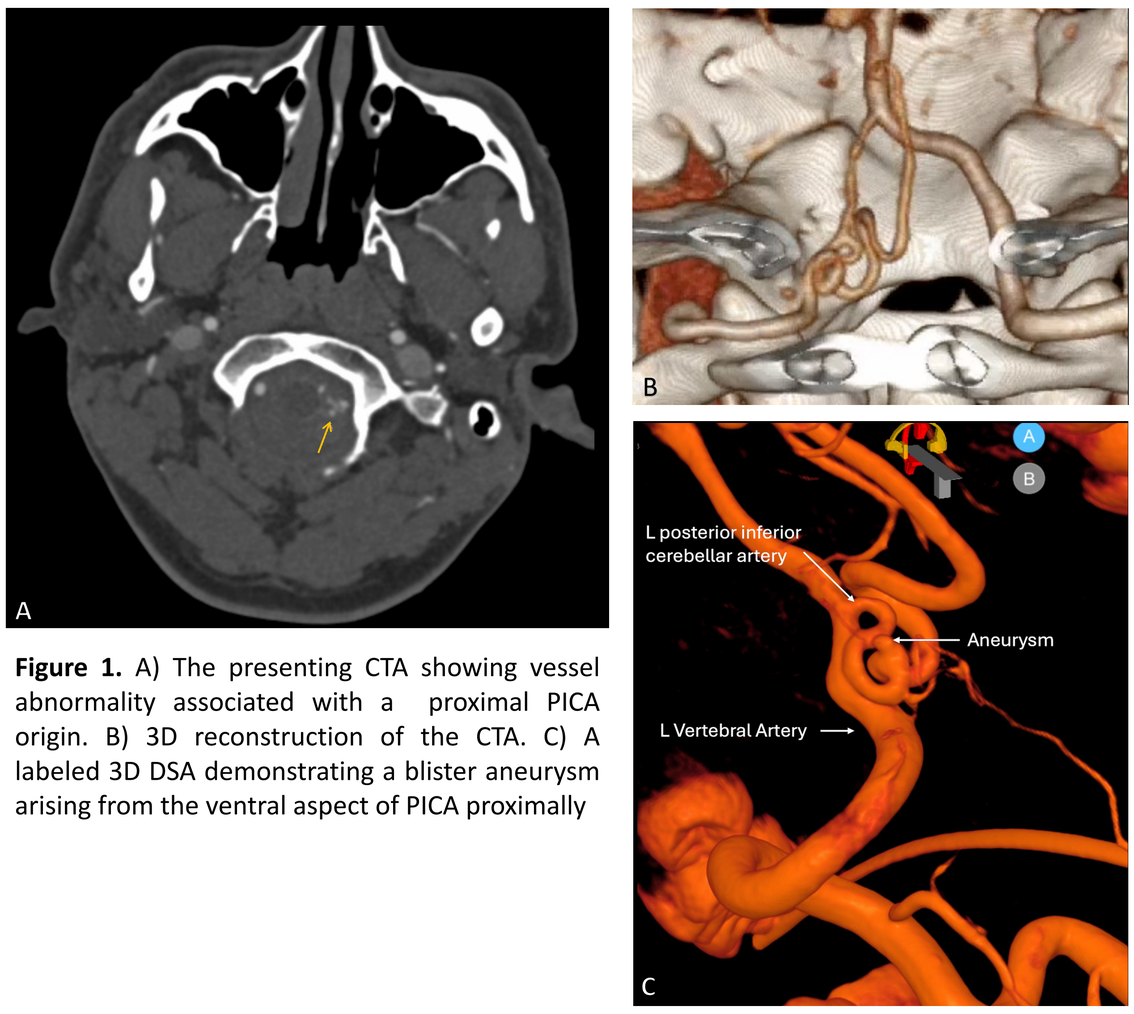

Figure 1. A) The presenting CTA showing vessel abnormality associated with a proximal PICA origin. B) 3D reconstruction of the CTA. C) A labeled 3D DSA demonstrating a blister aneurysm arising from the ventral aspect of PICA proximally

Case Presentation

Patient: 23-year-old male

Presentation: Sudden onset severe headache with progressive somnolence.

Initial Imaging: Non-contrast CT demonstrated diffuse subarachnoid hemorrhage with IVH and associated hydrocephalus, modified Fischer grade 4.

Vascular Evaluation: CTA and diagnostic cerebral angiography revealed a ruptured left proximal PICA aneurysm arising from a tortuous lateral medullary segment near the vertebral artery–PICA junction.

Initial Management: An external ventricular drain was placed for CSF diversion and intracranial pressure control.

Operative Intervention: Given the aneurysm's fragile blister-type morphology and small size, proximal vertebral–PICA junction location, marked parent vessel tortuosity, and recent rupture, definitive microsurgical clip reconstruction was favored over primary endovascular therapy.

Alternative Treatment Option: Endovascular management with stent-assisted coil embolization was considered. Intracranial stenting with dual antiplatelet therapy carries added risk in the acute subarachnoid hemorrhage period. Furthermore, proximal PICA occlusion poses a significant risk of lateral medullary infarction, and severe vessel tortuosity can limit catheter stability and durable aneurysm exclusion.

Postoperative Course: The aneurysm was successfully obliterated with preservation of proximal PICA flow. Recovery was uncomplicated, without lower cranial nerve dysfunction or new neurological deficit. The patient was discharged home on postoperative day 12, neurologically intact.

Surgical Technique and Operative Nuances

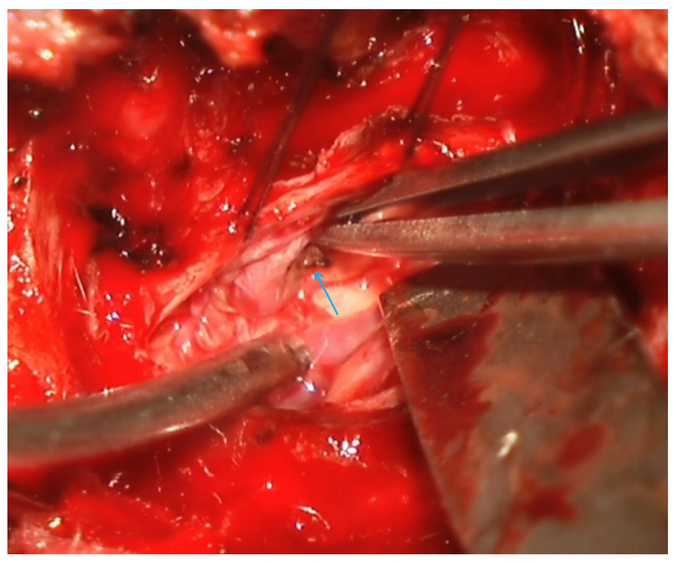

Figure 2. Intraoperative video showing the ruptured blister aneurysm (blue arrow) s/p coagulation with bipolar cautery.

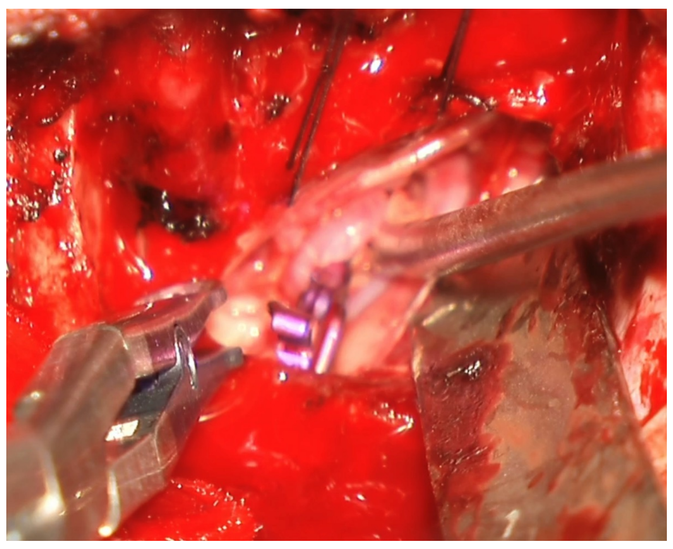

Figure 3. Intraoperative photo status post muslin gauze wrap and clip.

Figure 4. Follow this QR code to watch the operative video.

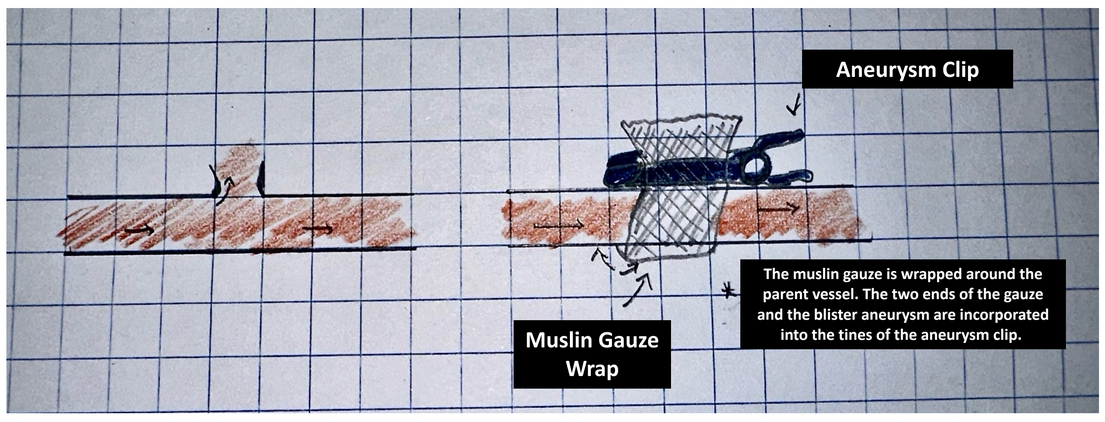

Figure 5. On the left there is a side view of the ruptured blister aneurysm and parent vessel. On the right there is that same side view with the muslin gauze wrapped around the parent vessel and both the gauze and the blister aneurysm are included in the tines of the clip.

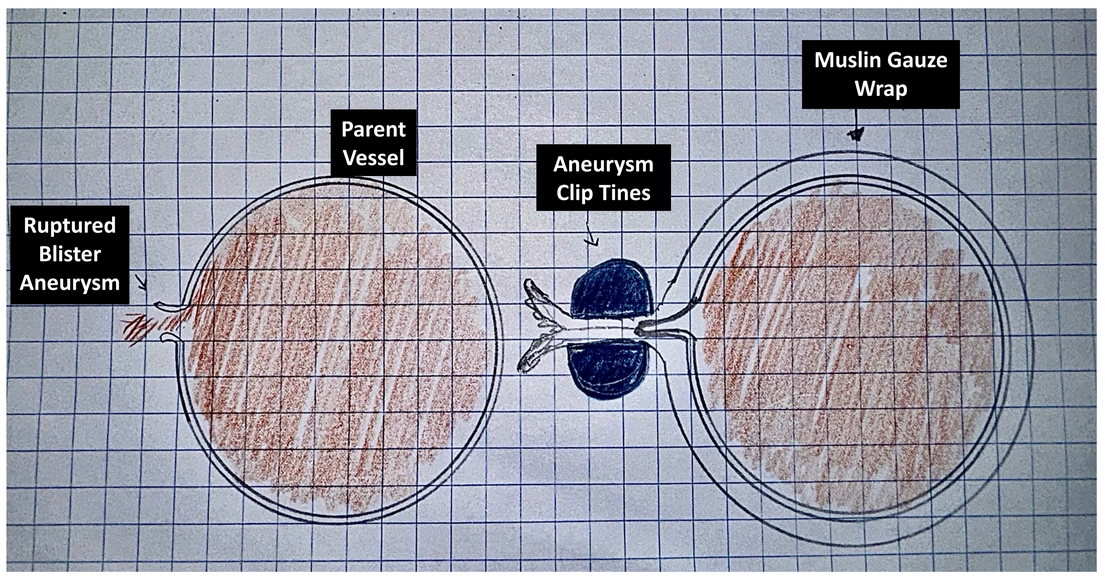

Figure 6. On the left there is a cross-section view of parent vessel and ruptured blister aneurysm. On the right there is a cross-section view of the parent vessel, aneurysm, and demonstration of the muslin gauze wrapped around the parent vessel. The ends of the muslin gauze and the blister aneurysm are included in the tines of the aneurysm clip.

Conclusions

- Far Lateral transcondylar approach provides excellent access and exposure of the left proximal PICA if the PICA arises from the proximal intradural vertebral artery and is lateral to the brainstem.
- Cotton clipping technique allows secure occlusion of the aneurysm while preserving the parent vessel after intraoperative aneurysm neck rupture.

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References

1. Safavi-Abbasi S, Moron F, Sun H, Oppenlander ME, Kalani MY, Mulholland CB, Zabramski JM, Nakaji P, Spetzler RF. Techniques and long-term outcomes of cotton-clipping and cotton-augmentation strategies for management of cerebral aneurysms. J Neurosurg. 2016 Sep;125(3):720-9. doi: 10.3171/2015.7.JNS151165. Epub 2016 Jan 15. PMID: 26771857.
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