



Video Abstract

Modified lateral orbitotomy approach for resection of anterior temporal cavernous malformation

Robert C. Rennert , Michael T. Bounajem, Karol P. Budohoski , Vance R. Mortimer, William T. Couldwell

Department of Neurosurgery, Clinical Neurosciences Center, University of Utah, Salt Lake City, United States.

E-mail: Robert C. Rennert - robert.rennert@hsc.utah.edu; Michael T. Bounajem - michael.bounajem@hsc.utah.edu;

Karol P. Budohoski - karol.budohoski@hsc.utah.edu; Vance R. Mortimer - vance.mortimer@hsc.utah.edu; *William T. Couldwell - neuropub@hsc.utah.edu



*Corresponding author:

William T. Couldwell,
Department of Neurosurgery,
Clinical Neurosciences Center,
University of Utah, Salt Lake
City, United States.

neuropub@hsc.utah.edu

Received : 16 April 2022
Accepted : 12 August 2022
Published : 26 August 2022

DOI
10.25259/SNI_354_2022

Videos available on:
www.surgicalneurologyint.com

Quick Response Code:



ABSTRACT

Background: The lateral orbitotomy approach (LOA) provides a direct and minimally invasive corridor to orbital apex, cavernous sinus, and middle cranial fossa (MCF) lesions. Removal of the lateral orbital wall and retraction of the orbital contents, as performed with a traditional LOA, can cause diplopia and enophthalmos and affect visual acuity. The modified LOA (mLOA) preserves the lateral orbital wall to limit this morbidity.

Case Description: A 58-year-old man experienced new-onset headaches and anxiety attacks that improved with anti-seizure medication. He was neurologically intact on examination. Magnetic resonance imaging demonstrated a 2-cm right anterior temporal cavernous malformation with an associated hemosiderin ring. Electroencephalogram revealed right temporal intermittent rhythmic delta activity suspicious for anterior temporal lobe epilepsy. He underwent an endoscopic-assisted keyhole mLOA for resection of the cavernoma and hemosiderin-stained brain. Key steps included a Y-shaped incision in the upper eyelid/lateral canthus, removal of a 1.5-cm segment of the lateral orbital rim, drilling of the lateral orbital wall with preservation of the medial cortex, drilling the lateral sphenoid ridge to access the anterior temporal lobe, resecting the cavernoma with endoscopic assistance for removal of all potentially epileptogenic abnormal brain, and plating the orbital rim as part of a layered closure. Postoperatively, he remained neurologically intact. He was discharged on postoperative day 4 after resolution of a cerebrospinal fluid leak with lumbar drainage. On follow-up, his anxiety attacks had completely resolved, and his incision was well-healed.

Conclusion: The mLOA is an ideal keyhole technique for selected lesions of the MCF.

Keywords: Cavernous malformation, Keyhole, Modified lateral orbitotomy

[Video 1]-Available on:

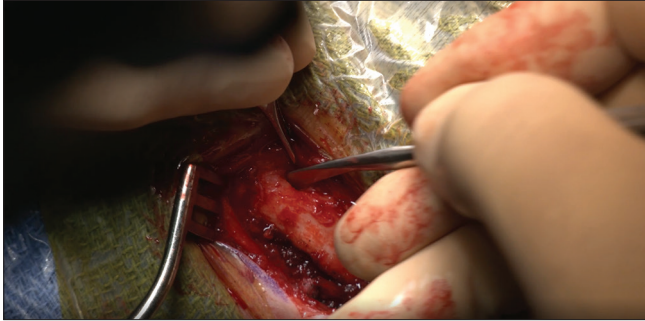
www.surgicalneurologyint.com

Annotations^[1,2]

- 1) 0:09 – Clinical presentation.
- 2) 0:29 – Neurologic examination.
- 3) 0:34 – Neuroimaging findings.
- 4) 0:43 – Rationale for the procedure.
- 5) 0:48 – Risks of the procedure and potential benefits.
- 6) 0:59 – Alternatives and why they were not chosen.
- 7) 1:12 – Description of the setup.
- 8) 1:29 – Positioning.

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, transform, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

©2022 Published by Scientific Scholar on behalf of Surgical Neurology International



Video 1: Video illustrating modified lateral orbitotomy approach used in the resection of an anterior temporal cavernous malformation.

- 9) 1:40 – Any necessary equipment.
- 10) 1:55 – Key surgical steps.
- 11) 2:25 – Surgical video.
- 12) 5:31 – Disease background.
- 13) 5:45 – Brief review of clinical and imaging background.

Declaration of patient consent

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

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Alzhrani GA, Gozal YM, Sherrod BA, Couldwell WT. A modified lateral orbitotomy approach to the superior orbital fissure: a video case report and review of anatomy. *Oper Neurosurg (Hagerstown)* 2019;16:685-91.
2. Cohen MA, Couldwell WT. Resection of cavernous sinus meningioma via lateral orbitotomy approach: 2-Dimensional operative video. *Oper Neurosurg (Hagerstown)* 2020; 18:E164.

How to cite this article: Rennert RC, Bounajem MT, Budohoski KP, MortimerVR, Couldwell WT. Modified lateral orbitotomy approach for resection of anterior temporal cavernous malformation. *Surg Neurol Int* 2022;13:389.