



Resection of a subcortical cavernous malformation in the precentral gyrus



Levin Häni^{*}, Andreas Raabe, David Bervini

Department of Neurosurgery, Inselspital, Bern University Hospital, University of Bern, 3010 Bern, Switzerland

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1. Background

After an initial bleed, the risk of subsequent hemorrhage in supratentorial cavernous malformations is 18.4 % in 5 years [1]. We present the case of a patient undergoing microsurgical resection of a motor eloquent cavernous malformation.

2. Illustrative case

A 32-year old male patient presenting with acute right-sided foot weakness was referred to our institution. A CT-scan demonstrated an acute intracerebral hemorrhage in the left medial precentral gyrus. Follow-up imaging demonstrated an underlying subcortical cavernous malformation as the source of bleeding. Meanwhile, the patient recovered completely from the initial foot weakness. After a thorough discussion of the risks and benefits of surgery, decision was taken to microsurgically remove the cavernous malformation under intraoperative neuromonitoring.

3. Surgical strategy

The patient was placed supine with the head flexed. A craniotomy exposing the medial part of the precentral gyrus and the superior sagittal sinus was performed. The interhemispheric fissure was dissected and opened. We localized the cavernous malformation using neuro-navigation, ultrasound and anatomical landmarks. Thereafter, we mapped the cortex overlying the cavernous malformation thoroughly using the monopolar suction device [2]. A train of five stimuli paradigm with anodal stimulation in decreasing intensities was applied [3]. At 5 mA stimulation intensity, we were able to identify a cortical area overlying the cavernoma without any motor responses. A small

corticotomy was made at this site and the cavernous malformation was reached under highest magnification. The cavernoma was removed and the resection cavity thoroughly inspected. A developmental venous anomaly was visible and preserved. Postoperatively, the patient demonstrated full motor strength and made an uneventful recovery. Postoperative imaging demonstrated complete removal of the cavernoma without any complicating features.

4. Discussion

This case demonstrates the feasibility of removal of motor eloquent cavernous malformations using intraoperative neuromonitoring. Electrophysiological mapping provides a safe entry zone for the corticotomy. While the stimulation intensity used as threshold for a safe entry zone is debatable, we felt confident with a negative mapping at 5 mA. Tailoring the approach using anatomical landmarks, ultrasound and neuro-navigation allows localization of the subcortical cavernous malformation.

5. Conclusion

Removal of subcortical motor eloquent cavernous malformations using dedicated intraoperative monitoring techniques is feasible and safe.

Informed consent statement

Informed consent was obtained for this study.

^{*} Corresponding author.

E-mail address: levin.haeni@insel.ch (L. Häni).

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Informed consent was obtained for this study.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jocn.2023.11.033>.

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