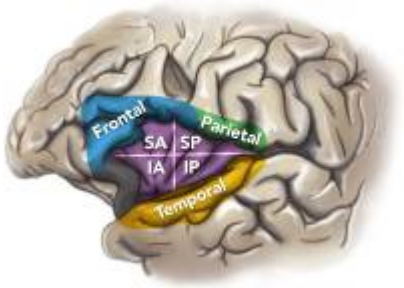
Operculoinsular cortectomy



Operculoinsular cortectomy for refractory epilepsy is a relatively safe therapeutic option but temporary neurological deficits after surgery are frequent. A study of Bouthillier et al. highlighted the role of frontal/parietal opercula resections in postoperative complications. Corona radiata ischemic lesions are not clearly related to motor deficits. There were no obvious permanent neurological consequences of losing a part of an epileptic insula, including on the dominant side for language. A low complication rate can be achieved if the following conditions are met: 1) microsurgical technique is applied to spare cortical branches of the middle cerebral artery; 2) the resection of an opercula is done only if the opercula is part of the epileptic focus; and 3) the neurosurgeon involved has proper training and experience [1)].

The goal of a study of Bouthillier et al. of the Sainte-Justine University Hospital Center, Montreal, Quebec, Canada, was to document seizure control outcome after operculoinsular cortectomy in a group of patients investigated and treated by an epilepsy team with 20 years of experience with this specific technique.

Clinical, imaging, surgical, and seizure control outcome data of all patients who underwent surgery for refractory epilepsy requiring an operculoinsular cortectomy were retrospectively reviewed. Tumors and progressive encephalitis cases were excluded. Descriptive and uni- and multivariate analyses were done to determine seizure control outcome and predictors.

Forty-three patients with 44 operculoinsular cortectomies were studied. Kaplan-Meier estimates of complete seizure freedom (first seizure recurrence excluding auras) for years 0.5, 1, 2, and 5 were 70.2%, 70.2%, 65.0%, and 65.0%, respectively. With patients with more than 1 year of follow-up, seizure control outcome Engel class I was achieved in 76.9% (mean follow-up duration 5.8 years; range 1.25-20 years). With multivariate analysis, unfavorable seizure outcome predictors were frontal lobe-like seizure semiology, shorter duration of epilepsy, and the use of intracranial electrodes for invasive monitoring. Suspected causes of recurrent seizures were sparing of the language cortex part of the focus, subtotal resection of cortical dysplasia/polymicrogyria, bilateral epilepsy, and residual epileptic cortex with normal preoperative MRI studies (insula, frontal lobe, posterior parieto-temporal, orbitofrontal).

The surgical treatment of operculoinsular refractory epilepsy is as effective as epilepsy surgery in other brain areas. These patients should be referred to centers with appropriate experience. A frontal lobe-like seizure semiology should command more sampling with invasive monitoring. Recordings with intracranial electrodes are not always required if the noninvasive investigation is conclusive. The complete resection of the epileptic zone is crucial to achieving good seizure control outcome [2)].

In 2017 Bouthillier et al. published twenty-five patients underwent an epilepsy surgery requiring an operculoinsular cortectomy: mean age at surgery was 35 y (9-51), mean duration of epilepsy was 19 y (5-36), 14 were female, and mean duration of follow-up was 4.7 y (1-16). Magnetic resonance imaging of the operculoinsular area was normal or revealed questionable nonspecific findings in 72% of cases. Investigation with intracranial EEG electrodes was done in 17 patients. Surgery was performed on the dominant side for language in 7 patients. An opercular resection was performed in all but 2 patients who only had an insulectomy. Engel class I seizure control was achieved in 80% of patients. Postoperative neurological deficits (paresis, dysphasia, alteration of taste, smell, hearing, pain, and thermal perceptions) were frequent (75%) but always transient except for 1 patient with persistent mild alteration of thermal and pain perception. [3].

References

[1]
Bouthillier A, Weil AG, Martineau L, Létourneau-Guillon L, Nguyen DK. Operculoinsular cortectomy for refractory epilepsy. Part 2: Is it safe? J Neurosurg. 2019 Sep 20:1-11. doi: 10.3171/2019.6.JNS191126. [Epub ahead of print] PubMed PMID: 31597116.

[2]
Bouthillier A, Weil AG, Martineau L, Létourneau-Guillon L, Nguyen DK. Operculoinsular cortectomy for refractory epilepsy. Part 1: Is it effective? J Neurosurg. 2019 Sep 20:1-10. doi: 10.3171/2019.4.JNS1912. [Epub ahead of print] PubMed PMID: 31629321.

[3]
Bouthillier A, Nguyen DK. Epilepsy Surgeries Requiring an Operculoinsular Cortectomy: Operative Technique and Results. Neurosurgery. 2017 Oct 1;81(4):602-612. doi: 10.1093/neuros/nyx080. PubMed PMID: 28419327.