The management of gliomas is based on precise histologic diagnosis. The tumor tissue can be obtained during open surgery or via stereotactic biopsy. Intraoperative tissue imaging could substantially improve biopsy precision and, ultimately, the extent of resection.

In a prospective observational study, 9 adult patients were enrolled between September 2014 and January 2015. Two contrast agents were used: 5 aminolevulinic acid (3 cases) or intravenous fluorescein (6 cases). Intraoperative imaging was performed with the Cellvizio system (Mauna Kea Technologies, Paris). A 0.85-mm probe was used for stereotactic procedures, with the biopsy needle modified to have a distal opening. During open brain surgery, a 2.36-mm probe was used. Each series corresponds to a separate histologic fragment.

The diagnoses of the lesions were glioblastoma (4 cases), low-grade glioma (2), grade III oligoastrocytoma (2), and lymphoma (1). Autofluorescence of neurons in cortex was observed. Cellvizio images enabled differentiation of healthy “normal” tissue from pathological tissue in open surgery and stereotactic biopsy using fluorescein. 5-Aminolevulinic acid confocal patterns were difficult to establish. No intraoperative complications related to pCLE or to use of either contrast agent were observed.

Pavlov et al., report the initial feasibility and safety of intraoperative pCLE during primary brain tumor resection and stereotactic biopsy procedures. Pending further investigation, pCLE of brain tissue could be utilized for intraoperative surgical guidance, improvement in brain biopsy yield, and optimization of glioma resection via analysis of tumor margins [1)].

1)
Pavlov V, Meyronet D, Meyer-Bisch V, Armoiry X, Pikul B, Dumot C, Beuriat PA, Signorelli F, Guyotat J. Intraoperative Probe-Based Confocal Laser Endomicroscopy in Surgery and Stereotactic Biopsy of Low-Grade and High-Grade Gliomas: A Feasibility Study in Humans. Neurosurgery. 2016 Oct;79(4):604-12. doi: 10.1227/NEU.0000000000001365. PubMed PMID: 27643918.