Intraoperative tissue collection

Currently, no scientifically derived standardized method exists for intraoperative tissue collection specifically designed with the fragility of ribonucleic acid (RNA) in mind. In this investigation, Das et al. set out to characterize matched specimens from six GB patients comparing the traditional handling and collection processes of intraoperative tissue used in most neurosurgical operating rooms (ORs) versus an automated resection, collection, and biological preservation system (APS) which captures, preserves, and biologically maintains tissue in a prescribed and controlled microenvironment. Matched specimens were processed in parallel at various time points and temperatures, evaluating viability, RNA and protein concentrations, and isolation of GB cell lines. We found that APS-derived GB slices stored in an APS modified medium remained viable and maintained high-quality RNA and protein concentration for up to 24 hours. Our results demonstrated that primary GB cell cultures derived in this manner had improved growth over the widely used collection and preservation methods. By implementing an automated intraoperative system, we also eliminated inconsistencies in the methodology of tissue collection, handling, and biological preservation, establishing a repeatable and standardized practice that does not require additional staff or a lab technician to manage [1].

1)
Das A, Gunasekaran A, Stephens HR, Mark J, Lindhorst SM, Cachia D, Patel SJ, Frankel BM. Establishing a standardized method for the effective intraoperative collection and biological preservation of brain tumor tissue samples using a novel tissue preservation system: A pilot study. World Neurosurg. 2022 Jan 12:S1878-8750(22)00033-X. doi: 10.1016/j.wneu.2022.01.030. Epub ahead of print. PMID: 35032716.