Surgery for tumors around the jugular foramen has significant risks of dysphagia and vocal cord palsy due to possible damage to the lower cranial nerve functions. For its treatment, long-term tumor control by maximum resection while avoiding permanent neurological damage is required. To accomplish this challenging goal, Matsushima et al. developed an intraoperative continuous vagus nerve monitoring system and herein report their experience with this novel neuromonitoring method.

Fifty consecutive patients with tumors around the jugular foramen (34 jugular foramen schwannomas, 11 meningiomas, 3 hypoglossal schwannomas, and 2 others) who underwent microsurgical resection under continuous vagus nerve monitoring within an 11-year period were retrospectively investigated. Evoked vagus nerve electromyograms were continuously monitored by direct 1-Hz stimulation to the nerve throughout the microsurgical procedure.

The average resection rate was 96.2%, and no additional surgery was required in any of the patients during the follow-up period (average 65.0 months). Extubation immediately after surgery and oral feeding within 10 days postoperatively were each achieved in 49 patients (98.0%). In 7 patients (14.0%), dysphagia and/or hoarseness were mildly worsened postoperatively at the latest follow-up, but tracheostomy or gastrostomy was not required in any of them. Amplitude preservation ratios on intraoperative vagus nerve electromyograms were significantly smaller in patients with postoperative worsening of dysphagia and/or hoarseness (cutoff value 63%, sensitivity 86%, specificity 79%).

Intraoperative continuous vagus nerve monitoring enables real-time and quantitative assessment of vagus nerve function and is important for avoiding permanent vagus nerve palsy while helping to achieve sufficient resection of tumors around the jugular foramen [1].

1)
Matsushima K, Kohno M, Ichimasu N, Tanaka Y, Nakajima N, Yoshino M. Intraoperative continuous vagus nerve monitoring with repetitive direct stimulation in surgery for jugular foramen tumors. J Neurosurg. 2021 Feb 19:1-8. doi: 10.3171/2020.8.JNS202680. Epub ahead of print. PMID: 33607614.