FEASIBILITY OF SYNCHRONOUS BI-LATERAL CONTINUOUS INTRAOPERATIVE NEUROMONITORING (SBCIONM) OF BOTH RLN IN ADVANCED THYROID

Ulmer, Christoph[1]; Rieber, Fabian[2]; Richter, Alexander[3]; Steurer, Wolfgang[3]; Friedel, Godehard[4]
[1]Dept. of General and Visceral Surgery, Robert-Bosch-Hospital, Stuttgart, Baden-Württemberg, Germany; [2]Dept. of Geriatric Rehabilitation, Stuttgart, Baden-Württemberg, Germany; [3]Dept. of General and Visceral Surgery, Stuttgart, Baden-Württemberg, Germany;[4]Dept. of Thoracic Surgery, Stuttgart, Baden-Württemberg, Germany

Background/Purpose: Recurrent laryngeal nerve (RLN) injuries are dreaded complication in thyroid resection. Especially in cases with resection of the trachea in advanced thyroid cancer cases. Conventional CIONM could only monitor one side. But in these cases both RLNs are at risk at the same time. Herein, we present the results of the first three cases with a synchronous bilateral CIONM.
Methods: Three patients with indication for resection of the middel part of the trachea (one adenoid-cystic tumor of the trachea, two tracheomalacies in thyroid cancer). Operation was planed as a thyreoidectomy and partial resection of the trachea and direct re-anastomosis.
Results: After Kocher-cervical incision and median sternotomy, next step was the identification of both vagal nerves hooking them up with our newly developed bipolar cuff-electrodes. Supramaximal stimulation current was between 0.3 to 0.7mA, admitted in an alternated pattern with a 1 Hz frequency. As sensing electrodes we used either two needle electrodes or two hook wires. During resection, multiple reductions of amplitudes were seen, which immediatly recovered while reducing tension on the trachea or the thyroid. No reduction of the amplitude below 50% was seen. No brady-arrhythmia occur. Heart rate frequency analysis revealed the same pattern of parasympathetic activation as discribe before by this study group. No postoperative prolonged vomiting was observed. In all cases no vocal cord paresis was documented.
Discussion & Conclusion: Synchronous bi-lateral continuous intraoperative neuromonitoring (sbCIONM) to monitor both RLNs at the same time during complex cervical operation is feasible. This opens up new indications for CIONM, e.g. for mediastinoscopic procedures, broad thyroid cancers and of course for all tracheal resections.