

## **Trial summary CITY**

### **Background:**

Thyroid surgery is performed daily, its most frequent indication is the benign goiter. A major complication is the damage of the recurrent laryngeal nerve (RLN) resulting in transient or permanent vocal cord palsy. Intermittent intraoperative neuromonitoring (I-IONM) enables sequential stimulation of the RLN and supplements visualization by functional analysis. A new kind of neuromonitoring, continuous intraoperative neuromonitoring (C-IONM) monitors the functional integrity of the RLN in real time during the whole procedure. The trial is designed to evaluate the role of C-IONM compared to I-IONM in prevention of RLN palsy in thyroid surgery.

### **Methods / Design:**

Patients with benign goiter scheduled for surgery following the national S2-guideline are eligible. The performed procedure has to be thyroidectomy, hemithyroidectomy or near-total resection. Exclusion criteria are proven malignancy, preoperative recurrent laryngeal nerve palsy, previous thyroid or parathyroid surgery or neck dissection. The trial is designed as a prospective randomized controlled multicenter trial. The intervention addresses the kind of intraoperative neuromonitoring in a parallel design: C-IONM in the intervention group and I-IONM in the control group. Occurrence of transient postoperative RLN palsy is defined as primary endpoint. The primary efficacy analysis follows the intervention-to-treat principle. A binary logistic regression model will be applied. Serious complications will be descriptively analyzed.

### **Discussion:**

The trial is expected to define the gold standard for surgical therapy of benign goiter. Patients' safety and quality of life are assumed to be enhanced and health care optimized.