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Systematic use of recurrent laryngeal nerve neuromonitoring changes the operative strategy in planned bilateral thyroidectomy.

Sadowski SM, Soardo P, Leuchter I, Robert JH, Triponez F.

Thoracic and Endocrine Surgery, University Hospitals of Geneva, Geneva, Switzerland.

BACKGROUND: One of the worst complications in thyroid surgery is bilateral recurrent laryngeal nerve paralysis, which can lead to transient or definitive tracheotomy.

METHODS: We implemented a strict standard operative procedure beginning in January 2010 and modified our operative procedure. In all patients undergoing bilateral operation, we begin with the largest side or with the cancerous/suspicious side without dissecting the contralateral side. If the intraoperative neuromonitoring (IONM) signal is lost after stimulation of the vagus nerve at the end of the first side, we stop the procedure after the unilateral lobectomy, even if the recurrent nerve is anatomically intact and regardless of malignancy. If the IONM signal is lost, serial laryngoscopies are performed until recovery or definitive recurrent laryngeal nerve palsy is demonstrated. We report here our results in patients with loss of the IONM signal after lobectomy and discuss the medical implications for benign and malignant thyroid conditions.

RESULTS: Since January 2010, the operation has been stopped at the first side in 9 out of 220 planned bilateral thyroidectomies. There were five benign thyroid conditions and four thyroid cancers, including three papillary thyroid cancers and one bilateral medullary thyroid cancer in a patient with multiple endocrine neoplasia 2a. In two patients, it was a false-positive IONM loss. One of these two patients had the other lobe removed at day 3. In seven patients the laryngoscopy demonstrated total or partial laryngeal nerve palsy at day 1, but the recurrent nerve function recovered fully in all patients between 1 and 4 months postoperatively. All cancer patients were operated on the other side within 3 days to 3 months; one patient with a benign condition is being followed conservatively. One of the eight re-operated patients had transient recurrent nerve palsy postoperatively.

CONCLUSION: In our opinion, the systematic use of IONM and the change in operative strategy will lead to an almost 0% rate of bilateral laryngeal nerve palsy, at least in benign thyroid conditions. A loss of signal after the first side should prompt a halt in the procedure, even in cases of malignancies.