INTRODUCTION

Surgery of the thyroid and parathyroid glands is performed routinely for the treatment of conditions such as nodular thyroid goiter, hyperthyroidism, thyroid cancer, Hashimoto’s disease, parathyroid adenoma and hyperplasia. The recurrent laryngeal nerve (RLN) is at high risk during thyroid and parathyroid surgery with a reported incidence of permanent nerve damage of 1–3% and temporary RLN injury in 5–8%. Unilateral RLN paralysis may result in a breathy voice, aspiration in the early postoperative period, and swallowing dysfunction. Bilateral RLN palsy can result in airway compromise requiring an emergent tracheostomy. Consequently, an accurate assessment of postoperative vocal cord status is important and allows for prediction of postoperative recovery following any neck surgery that puts the RLN at risk.

Fiber-optic laryngoscopy is widely considered the gold standard for detecting post-operative RLN palsy as it allows visualization of the vocal cords in 99% of cases following thyroidectomy. This procedure, however, is invasive, requires topical anesthesia, a physician trained in performing this procedure, and additionally is often uncomfortable for the patient. This is especially true if the assessment of vocal cord function needs to be performed in the immediate postoperative period.

Our study proposes the use of ultrasonography in vocal cord assessment and aims to measure its accuracy in doing so following thyroid and parathyroid surgery.

METHODS AND MATERIALS

All patients undergoing thyroid and parathyroid surgery by a single surgeon (RRW) at Our Lady of the Lake Regional Medical Center, Baton Rouge with the LSU Department of Otolaryngology between January 2011 to September 2011 were included in the study. Data was collected in a prospective fashion and analyzed retrospectively. Clinical, demographic, surgical data, pathological data, subjective voice assessments, and vocal cord status was documented (Table 1). The assessment of vocal cord function was done at three time points. A routine preoperative evaluation with FL in the office. The second time point included an immediate per-operative ultrasound examination to document vocal cord function. The ultrasound was performed by the attending surgeon (RRW) or the ENT Resident with the attending present. The procedure was performed either in the operating room immediately after extubation or in the recovery room. Perioperative voice and swallowing functions were also recorded and were based on subjective assessments. The third point of evaluation was the routine post-operative FL in the office at the first follow up visit.

RESULTS

Seventeen patients with a mean age of 49.6 years (range 13 – 75) underwent a total of 18 procedures. The procedures included parathyroidectomy (5/18), hemithyroidectomy (9/18), and total thyroidectomy (4/18). Endoscopically, video-assisted assisted in 33% and 67% were open procedures. Pathology included papillary carcinoma, follicular adenoma, multinodular adenomatous hyperplasia, lymphocytic thyroiditis, parathyroid adenoma and atypical parathyroid adenoma. The pre-operative VCF was normal in all 17 patients. In 17 procedures, the RLN was localized and stimulated intra-operatively. In one patient undergoing a total thyroidectomy, the RLN were identified but had an inconsistent nerve stimulation. Initial stimulation at 1 mA was negative. However, at the end of the procedure both nerves stimulated appropriately. Ultrasonography was performed in the operating room in 17/18 cases. In one patient, the ultrasonography was performed after the patient was transferred to the recovery unit. On ultrasonography, bilateral VCF was recorded as “Normal” in all 18 procedures and visualization of vocal cord mobility was possible without any difficulty or patient discomfort in all patients. The postoperative USG finding correlated with good voice quality and normal bilateral VCF on follow up FL in 99.95% of cases.

CONCLUSIONS

USG provides a non-invasive and accurate estimate of VCF immediately after thyroid and parathyroid surgery and empowers the surgeon with information that can be used to prognosticate postoperative recovery.

USG for VCF assessment is technically easy, cost effective, and comfortable for the patients. It can be easily adapted into the practice by physicians in various levels of training and experience and consequently we propose that it should be routinely utilized for evaluation of post-thyroidectomy and parathyroidectomy vocal cord mobility.

REFERENCES


