



THYROID SURGERY

Rate of Thyroid Hormone Replacement After Lobectomy for Benign Disease Is Higher than Previously Estimated

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SUMMARY

Background

Hypothyroidism requiring thyroid hormone replacement therapy (THRT) following lobectomy may occur in 8 to 50% of cases, with an increased likelihood in patients with elevated preoperative thyroid stimulating hormone (TSH), positive thyroid peroxidase antibodies, lymphocytic thyroiditis, thyroid malignancy as the reason for the surgery, and postoperative small remnant volume (1-4). This study was performed to determine the frequency and timing of THRT initiation after lobectomy over a 15-year follow-up period in order to guide the duration of postoperative biochemical surveillance and improve perioperative counseling (5).

Methods

This retrospective review identified patients who underwent thyroid lobectomy, for any indication, at a single institution between 2005 and 2010. Demographic, pathologic, and biochemical data were collected. Studied patients had no prior thyroid surgery, subsequent contralateral lobectomy, prior or subsequent radioactive iodine ablation therapy, or preoperative thyroid hormone supplementation.

The primary outcome was initiation of THRT with synthetic or natural liothyronine (LT3) or levothy-

roxine (LT4) therapy in patients with TSH levels >4.5 mIU/L. The timing of THRT initiation during the 10- to 15-year follow-up period was determined using provider notes, medication reconciliation data, and/or direct telephone contact.

Results

The study cohort included 235 patients, 96.6% of whom had a benign pathology. THRT was initiated in 46.8% (n = 110) of patients; the mean (\pm SD) timing of THRT initiation was 1.7 ± 0.3 years after lobectomy, with 25% starting therapy ≥ 2 years after surgery (mean, 5.70 years). By 5 years after lobectomy, THRT had been started in 89%. Biochemical data were available for 45% of patients requiring THRT and demonstrated a mean postoperative TSH level of 9.08 ± 1.9 mIU/L prior to THRT initiation. Of those with a benign pathology, 46.3% required THRT.

Compared with the patients who did not require THRT, patients who required THRT were more likely to have concurrent Hashimoto's thyroiditis, defined as chronic lymphocytic thyroiditis on final pathology (21.8% vs. 8.0%; OR, 3.2; 95% CI, 1.43–6.79). To minimize a potential confounding effect of Hashimoto's thyroiditis on THRT initiation after lobectomy, an additional subgroup analysis that





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excluded patients with Hashimoto's thyroiditis was performed; it demonstrated a similar rate of THRT initiation compared to the Hashimoto thyroiditis-inclusive cohort (42.7% vs. 46.8%, $P = 0.40$). Age, sex, surgical indication, and malignant pathology rates were similar between the THRT and non-THRT groups.

Conclusions

Thyroid hormone replacement therapy is initiated in 46.3% of patients after lobectomy for benign disease, and 25% do not start therapy until ≥ 2 years after surgery. Accordingly, the authors suggest that thyroid function testing should occur annually for a minimum of 2 years after lobectomy.

COMMENTARY

This study (5) reports a higher rate of de novo THRT initiation after lobectomy for benign disease than did prior studies (46% vs. 22%) (4). As 11% of patients did not initiate THRT until > 5 years after lobectomy, the observed higher rate of THRT may reflect this study's 10- to 15-year follow-up time, which exceeds the longest follow-up duration previously reported in a large meta-analysis by 5 to 10 years (4). This is important when considering the duration of postoperative biochemical surveillance.

Strengths of this study include the large sample size of patients with long-term follow-up data. However, preoperative TSH values are not reported for studied patients, so some patients with subclinical hypothyroidism may have been included, resulting in an overestimation of the percentage of euthyroid patients requiring THRT postoperatively. Similarly, although high rates of THRT persisted on subgroup analysis that excluded patients with Hashimoto's thyroiditis on final pathology, detection of thyroid peroxidase antibodies preoperatively was not reported. Consequently, the findings may not be generalizable to biochemically euthyroid patients, patients with

subclinical hypothyroidism, and patients with no evidence of thyroid autoimmunity preoperatively.

At our institution, TSH is first measured at 2 months postoperatively, with interval assessment every few months for the first year after lobectomy. Thereafter, barring any other thyroid pathology that would warrant ongoing endocrinology follow-up, patients will transition care to their primary care provider. In accordance with the findings of this study, it is important to recommend annual TSH testing for a minimum of 5 years after lobectomy for benign disease during the transition of patient care to the primary care physician. This will permit the timely diagnosis and treatment of a large percentage of patients who may experience delayed onset of hypothyroidism after lobectomy. Additionally, patients undergoing lobectomy for benign pathology can be appropriately counseled on the long-term risk of requiring thyroid hormone replacement therapy.

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