



## THYROID SURGERY

### Many patients who become hypothyroid after lobectomy will recover normal thyroid function

#### BACKGROUND

In the past, a total thyroidectomy was frequently the operation of choice for thyroid cancer. Currently, risk assessment of the potential of the cancer to recur can be done prior to surgery using the results of the thyroid biopsy and the ultrasound of the neck. Patients with small cancers and with no evidence of abnormal lymph nodes are generally considered low risk and may be managed with a lobectomy instead of a totally thyroidectomy, especially if the opposite lobe is normal. Thyroid lobectomy has advantages over total thyroidectomy in decreasing surgical complications and potentially avoiding the need for lifelong thyroid hormone therapy. The reported incidence of hypothyroidism (low thyroid hormone levels) after lobectomy is approximately 15%. Prior studies have not been uniform in their criteria for starting thyroid hormone therapy or duration of follow-up. This study examined the frequency and risk factors for hypothyroidism after lobectomy for papillary thyroid cancer.

#### THE FULL ARTICLE TITLES:

Park S et al. Clinical features of early and late postoperative hypothyroidism after lobectomy. *J Clin Endocrinol Metab* 2017;102:1317-24.

#### SUMMARY OF THE STUDY

This was a review of patients who underwent thyroid lobectomy for in Seoul, Korea, between 2008 and 2011. Thyroid function tests (TSH and free T<sub>4</sub>) were measured 2 to 3 months after surgery. Patients with normal thyroid function had levels checked repeatedly every 6 to 12 months thereafter; patients diagnosed with hypothyroidism were reassessed every 3 to 6 months. Patients with hypothyroidism were treated with levothyroxine. The hypothyroidism group was separated into early (within 12 months after surgery) or late (>12 months after surgery) development. Pre-operative clinical factors including TSH and the presence of thyroid antibodies were assessed as potential predictors for postoperative hypothyroidism.

Of 335 patients who underwent lobectomy, 79.4% were female and the average age was 47.9 years. The average

follow-up duration was 56.2 months. The rate of postoperative hypothyroidism was 64.2%. Overt hypothyroidism developed in only 5 patients, while the remaining 210 patients had subclinical hypothyroidism. The average time to diagnosis of hypothyroidism was 4.0 months. Early hypothyroidism developed in two-thirds of patients, while the remaining one-third had late hypothyroidism. Having a TSH level >3.1 mIU/L at 1 year after surgery was predictive of the development of late hypothyroidism. Patients in whom early hypothyroidism developed had higher preoperative TSH levels and an increased rate of positive thyroid peroxidase antibody compared with patients in whom late hypothyroidism developed. Patients who remained euthyroid (normal thyroid levels) had a lower preoperative TSH as compared with patients in whom postoperative hypothyroidism developed.

Of all patients in whom hypothyroidism developed, 40 were treated with levothyroxine. The remaining 175 patients had subclinical hypothyroidism with an average postoperative TSH in the 7 mIU/L range. These patients were followed without thyroid hormone treatment and 68.0% recovered normal thyroid function at an average time interval of 12.2 months. Despite a normal preoperative TSH level in the 2 mIU/L range, 64% of patients who underwent thyroid lobectomy experienced at least temporary post-surgical hypothyroidism. The majority of these patients had subclinical hypothyroidism, and two thirds recovered normal thyroid status. A preoperative TSH level >1.7 mIU/L was predictive of postoperative hypothyroidism and lack of recovery to normal thyroid hormone levels.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The benefits of lobectomy over total thyroidectomy include a decreased risk of surgical complications and the potential to avoid long-term thyroid hormone supplementation. Many patients are very interested in undergoing lobectomy to retain their own thyroid function and avoid the need for long-term medication. The current study will help to inform preoperative counseling about the risk of postoperative hypothyroidism in individual patients.

**THYROID SURGERY, continued**

This study shows that 64% of patients who undergo lobectomy will develop hypothyroidism, although in the vast majority these patients this will be mild with only a slightly increased TSH (subclinical hypothyroidism). Further, 68% of patients in whom subclinical hypothyroidism developed after surgery recovered normal thyroid function. Thus, patients with subclinical hypothyroidism after lobectomy may benefit from a prolonged period of observation without thyroid hormone therapy to determine whether the remaining lobe will eventually compensate and maintain normal thyroid function. An additional factor to consider is quality of life after surgery, particularly during a period of “subclinical” hypothyroidism. Hypothyroidism (even in the absence of overt symptoms) may contribute to this. Quality of life was not

included in the current analysis but will be important to assess in future studies, particularly given the long time interval to recover the normal thyroid status.

— Ronald B. Kuppersmith, MD, FACS

**ATA THYROID BROCHURE LINKS**

Thyroid Surgery: <http://thyroid.org/patients/patient-brochures/surgery.html>

Hypothyroidism (Underactive): <http://www.thyroid.org/hypothyroidism/>

Thyroid Hormone Treatment: <http://www.thyroid.org/thyroid-hormone-treatment/>

**ABBREVIATIONS & DEFINITIONS**

**Euthyroid:** a condition where the thyroid gland as working normally and producing normal levels of thyroid hormone.

**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

**Subclinical Hypothyroidism:** a mild form of hypothyroidism where the only abnormal hormone level is an increased TSH. There is controversy as to whether this should be treated or not.

**Overt Hypothyroidism:** clear hypothyroidism an increased TSH and a decreased T<sub>4</sub> level. All patients with overt hypothyroidism are usually treated with thyroid hormone pills.

**Lobectomy:** surgery to remove one lobe of the thyroid.

**Total thyroidectomy:** surgery to remove the entire thyroid gland.

**Thyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland. T<sub>4</sub> gets converted to the active hormone T<sub>3</sub> in various tissues in the body.

**TSH: thyroid stimulating hormone** – produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.