



HYPOTHYROIDISM

Thyroid hormone replacement dosing is variable in overweight and obese patients after a thyroidectomy

BACKGROUND

Patients undergoing a total thyroidectomy become hypothyroid and require lifelong therapy with thyroid hormone. The American Thyroid Association guidelines for treatment of hypothyroidism recommend levothyroxine on a daily basis as the treatment of choice to replace the thyroid hormones that the thyroid gland provided. An appropriate dose of levothyroxine should result in normal levels of thyroid stimulating hormone (TSH) and thyroid hormones in the blood and varies from patient to patient.

After surgery, the initial levothyroxine dose is often prescribed based on the patient's body weight (1.6 mcg/kg body weight). The dose is then be adjusted 6 to 8 weeks later, based on the blood test result. Although, the above dose may be suitable for many patients, prior studies have suggested that obese individuals may need a relatively lower dose relative to their body weight. This study was conducted to identify a better method for picking the initial dose of levothyroxine for obese patients.

THE FULL ARTICLE TITLE

Papioian V et al. Evaluation of thyroid hormone replacement dosing in overweight and obese patients after a thyroidectomy. *Thyroid*. Epub 2019 Oct 1. PMID: 31573413.

SUMMARY OF THE STUDY

This study was performed in a large teaching hospital and referral center. Patients who had a total thyroidectomy from 2012 to 2015 were identified and their records were reviewed. Patients who were pregnant or breast feeding

at the time of surgery and those with thyroid cancer were not included in the study. A total of 114 patients who had follow up visits after surgery were recruited. Their weight and Body Mass Index (BMI) before surgery were obtained by chart reviews.

The average age of patients was 55 year old and 84% were women. Almost half of them were obese. In average, they had two consecutive normal TSH test results in about 50 weeks after surgery. The dose of levothyroxine for each case was recorded at that time and patients were divided to five groups based on their BMI. The dose of Levothyroxine resulted in a normal and stable TSH level was 1.76 microgram per kilogram of weight for individuals with BMI less than 25, 1.47 for those with BMI 25 to 29, 1.42 for those with BMI 30 to 34, 1.27 for those with BMI 35 to 39 and 1.28 for those with BMI more than 40.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that the use of a standardized dose for prescribing the initial dose of levothyroxine after surgery based on the actual body weight frequently will result in either too high or too low thyroid levels. In overweight and obese patients, a much lower mcg/kg body weight dose should be used, while a higher dose should be used in patients with a normal BMI. These results will benefit patients after thyroid surgery as they may start taking a more appropriate dose of levothyroxine as soon as possible after thyroid surgery, and require fewer blood tests for dose adjustments.

— Shirin Haddady, MD

ATA THYROID BROCHURE LINKS

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

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

Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>

Thyroid Function Tests: <https://www.thyroid.org/thyroid-function-tests/>





HYPOTHYROIDISM, continued

ABBREVIATIONS & DEFINITIONS

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

Thyroidectomy: surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy.

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

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.

Body-mass index (BMI): a standardized measure of obesity calculated by dividing the weight in kilograms by the square of the height. A normal BMI is 18.5-24.9, overweight is 25-30 and obese is >30.

