



THYROID SURGERY

A single PTH measurement on the first postoperative day predicts the need for calcium supplementation following thyroid surgery

BACKGROUND

The parathyroid glands are small glands near the thyroid and help regulate calcium levels in the body. When patients undergo surgery to remove the entire thyroid gland, one of the risks is damage to the parathyroid glands. If the parathyroid glands are injured during surgery, calcium levels in the blood can become dangerously low. This can be a temporary or a permanent problem. In the past, frequent blood draws were required to measure calcium levels at regular intervals after surgery to ensure that the calcium levels remain normal. If the calcium levels became too low then patients were treated with calcium and vitamin D.

More recently, physicians have looked for alternative methods that would reduce the number of required blood draws after surgery, predict whether a specific patient would develop low calcium levels and determine which patients would require calcium and/or vitamin D. This study studied whether measuring PTH on the first postoperative day would predict the need for postoperative calcium supplementation.

THE FULL ARTICLE TITLE:

Cayo AK et al. Predicting the need for calcium and calcitriol supplementation after total thyroidectomy: results of a prospective, randomized study. *Surgery* 2012;152:1059-67. Epub October 13, 2012.

SUMMARY OF THE STUDY

This was a prospective, randomized trial over a 23 month period looking at 142 patients that had their thyroid removed. PTH levels were measured on the morning of the first post-operative day. If the patients had a PTH level > 10, no calcium or vitamin D was given. If the PTH level was <5, the patient was randomly assigned to calcium sup-

plementation or calcium and calcitriol (vitamin D analog) supplementation. If the PTH was 5 to 10, the patient was randomly assigned to either calcium supplementation or no supplementation. According to this criteria, 116 patients were not given any supplementation, 20 patients were given calcium alone and 7 patients received calcium and calcitriol

In 10% of patients with a PTH ≥ 10 and 48 with PTH <10, symptoms of low calcium were reported within the first 72 hours after surgery. On statistical analysis, young age and postoperative PTH were independent risk factors for postoperative low calcium. A total of 55% of patients with a PTH <10 on postoperative day 1 were on calcium and calcitriol at 1 week after surgery, whereas no patients with a PTH ≥ 10 on postoperative day 1 were on routine calcium or calcitriol at 1 week after surgery.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Many studies have looked at PTH measurement after surgery as a predictor for whether a patient needs to take calcium after thyroid surgery. When the measurement should be taken and the guidelines for supplementation based on the measurement have varied between articles. This is a welcome development for patients, as it reduces the number of times blood has to be drawn to determine calcium levels after surgery for many patients and allows patients to go home sooner after their procedure.

— Ronald B. Koppersmith, MD, FACS

ATA THYROID BROCHURE LINKS

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

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THYROID SURGERY, continued

ABBREVIATIONS & DEFINITIONS

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.

Completion thyroidectomy: surgery to remove the remaining thyroid lobe in thyroid cancer patients who initially had a lobectomy.

Total thyroidectomy: surgery to remove the entire thyroid gland.

Hypoparathyroidism: low calcium levels due to decreased secretion of parathyroid hormone (PTH) from the parathyroid glands next to the thyroid. This can occur as a result of damage to the glands during thyroid surgery and usually resolves. This may also occur as a result of autoimmune destruction of the glands, in which case it is usually permanent.

Hypocalcemia: low calcium levels in the blood, a complication from thyroid surgery that is usually short-term and relatively easily treated with calcium pills. If left untreated, low calcium may be associated with muscle twitching or cramping and, if severe, can cause seizures and/or heart problems.

Parathyroid glands: usually four small glands located around the thyroid that secrete parathyroid hormone (PTH) which regulates the body's calcium levels.

Parathyroid hormone (PTH): the hormone that regulates the body's calcium levels. High levels of PTH cause hypercalcemia, or too much calcium in the blood. Low levels of PTH cause hypocalcemia, or too little calcium in the blood.

Calcitriol: an analog of Vitamin D that is fast acting and works to increase the absorption of calcium from the gut.