



THYROID SURGERY

Postoperative hypocalcemia is associated with preoperative Vitamin D deficiency

BACKGROUND

A common complication of thyroid surgery is transient postoperative hypocalcemia, which occurs in up to 30% to 35% of patients. This occurs because the parathyroid glands, which are found next to the thyroid, are often “bruised” during thyroid surgery and don’t work too well for a short time after surgery. This leads to a fall in parathyroid hormone (PTH), which is important in regulating blood calcium levels. This usually resolves in days to weeks. The rate of permanent hypocalcemia is thought to be <2% in the hands of experienced surgeons. Prevention of hypocalcemia after thyroid surgery may reduce costs due to extra days of hospitalization, extra medication, additional blood tests and outpatient visits.

Vitamin D plays an essential role in maintaining calcium levels by increasing calcium absorption from the gut. Vitamin D is produced in our skin after exposure to the sun. Vitamin D deficiency is common, especially in the northern part of the United States during the winter. This study examined the relationship between preoperative vitamin D levels and postoperative calcium levels.

THE FULL ARTICLE TITLE:

Kirkby-Bott J et al Preoperative vitamin D deficiency predicts postoperative hypocalcemia after total thyroidectomy. *World J Surg* 2011;35:324-30.

SUMMARY OF THE STUDY

The records of 165 patients undergoing thyroidectomies

between January 2006 and March 2009 at a premier academic hospital in London were examined. Patients were divided into three groups based on the preoperative vitamin D: group 1, <10 ng/ml; group 2, 10 to 20 ng/ml; group 3, >20 ng/ml. Hypocalcemia was defined as a postoperative calcium level of <8 mg/dl on postoperative day 1 or 2.

There were 44 cases of postoperative hypocalcemia in the 165 patients. Hypocalcemia occurred in 35.4% of group 1, 28.2% of group 2 and 15.2% in group 3. The average length of the hospital stay was significantly greater in those with preoperative vitamin D deficiency as compared with those without vitamin D deficiency. The risk of hypocalcemia was not associated with the reason for the thyroid surgery (ie cancer vs benign disease).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that preoperative vitamin D deficiency is a risk factor for transient but not permanent postoperative hypocalcemia. The threshold of the increased risk of postoperative hypocalcemia was a vitamin D level <14 ng/ml. This study suggests that all patient undergoing thyroid surgery would benefit from identifying and treating vitamin D deficiency before surgery.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

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

ABBREVIATIONS & DEFINITIONS

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.

Vitamin D: a vitamin that is important for maintaining calcium levels by increasing the absorption of calcium from the gut. Vitamin D is made in our skin after exposure to the sun.

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.

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.