Severe Symptomatic Hypocalcemia Following Total Thyroidectomy and Roux-en-Y Gastric Bypass

Case Report and Literature Review

Justin Gross, BA1; Steven M Olsen, MD2; Cody A Koch, MD2, Eric Moore, MD2

1University of North Dakota School of Medicine & Health Sciences, Grand Forks, ND; 2Department of Otorhinolaryngology: Head and Neck Surgery, Mayo Clinic, Rochester, MN

CASE REPORT

- 40-year-old white male referred for evaluation of 5-cm neck mass, later determined to be metastatic papillary thyroid carcinoma
- 6 months prior, he had undergone RYGB for treatment of morbid obesity
- Patients who undergo Roux-en-Y gastric bypass (RYGB) procedures are at moderate risk for calcium and vitamin D deficiency. Those who subsequently undergo thyroid or parathyroid surgery are at high risk for developing severe symptomatic hypocalcemia if not monitored and prophylactically treated adequately.
- We present a morbidly obese patient who underwent Roux-en-Y gastric bypass six months prior to the discovery of metastatic papillary thyroid carcinoma. He subsequently underwent total thyroidectomy with central and bilateral neck dissection. Following surgery, he developed severe symptomatic hypocalcemia that reached a nadir of 6.0 mg/dL. He required aggressive oral and intravenous repletion therapy with calcium, vitamin D, and magnesium for ten days before hospital discharge.
- Providers should institute careful preoperative screening, patient counseling, and prophylactic calcium and vitamin D therapy for all RYGB patients who subsequently require thyroid surgery to prevent the development of severe and life-threatening hypocalcemia. To date, only four reports have focused on the dangers of thyroid and parathyroid surgery in post gastric bypass surgery. We report this case to add to the growing body of literature for this patient population.

- On POD 4, cholecalciferol was discontinued and ergocalciferol was started. CaCO3 was replaced with calcium citrate, HCTZ, & calcitriol
- Over the first 24h his calcium dropped from 8.8 to 6.9 mg/dl and he remained asymptomatic. However, the following day he developed periorbital numbness and a positive Chvostek’s sign, with calcium ranging from 6.7 to 7.3 mg/dL
- PICC access was obtained and he was treated symptomatically
- On POD 4, cholecalciferol was discontinued and ergocalciferol was started. CaCO3 was replaced with calcium citrate, HCTZ, & calcitriol
- On POD ten, no signs or symptoms of hypocalcemia persisted, so the PICC line was removed and calcium citrate and ergocalciferol were continued PO
- Signs & symptoms of hypocalcemia were covered with the patient, and instructions were provided to return to the ED if symptoms returned
- At his three-week follow up appointment, calcium level was 8.2 mg/dL and he was experiencing no symptoms of hypocalcemia
- His current regimen includes ergocalciferol, calcium citrate, HCTZ, & calcitriol

CONCLUSIONS

- Patients undergoing thyroid or parathyroid surgery should be screened for a history of bariatric surgery. If positive, these patients should be counseled on the risk of developing severe hypocalcemia and pre-surgical prophylactic treatment with calcium and vitamin D should be instituted.
- In the five reviewed reports of post-thyroidectomy hypocalcemia, all nine patients required intravenous calcium infusion to stabilize calcium levels. It follows, then, that precautionary PICC line placement should be acquired at the time of surgery for such patients.
- Maximal replacement with oral calcium citrate, ergocalciferol, and calcitriol should be administered. We reserve intravenous calcium for symptomatic patients, in which case calcium gluconate should be considered.
- Nursing staff should perform evaluations for symptomatic hypocalcemia q2h, including testing for Chvostek’s and Trouseau’s signs, as well as questioning about perioral and limb paresthesias.
- Although not studied in this population, intramuscular teriparatide (recombinant PTH) injection may prove to be a useful drug in shortening hospital stay, and should be studied in the future.

REFERENCES